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# THE PSYCHOLOGICAL CLINIC

## *A Journal of Orthogenics*

*For the Study and Treatment*
*of Retardation and Deviation*

7794

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Editor:
LIGHTNER WITMER, Ph. D.,
University of Pennsylvania.

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**Retardation and deviation** *would not attract much interest simply as abnormal conditions. It is their curative treatment—the processes through which the abnormal may be made to develop into the normal—that inspires the present efforts of educator, psychologist and physician.*

The **Science** *which treats of the restoration of the retardate and the deviate to normality has been in want of a name.*

**The Psychological Clinic** proposes for this science the name **ORTHOGENICS,** *and will employ this term to define the journal's scope and object.*

*While orthogenics concerns itself primarily with the causes and treatment of retardation and deviation, it must naturally take cognizance also of the conditions which facilitate and conserve the normal development of mind and body.*

# INDEX OF NAMES.

Names of contributors are printed in SMALL CAPITALS, and the page numbers of the contributions in **full face type**. In the case of authors reviewed the page numbers are in *italics*, and in the case of mention they are in roman type.

Abbott, A. C., 184.
Abbott, Ernest Hamlin, *176*, 282.
Agassiz, L., 115.
Allen, William H., *114*, *174*.
ALLPORT, FRANK, **67**.
Ames, Charles W., 147.
AYRES, LEONARD P., **1**, 24, 31, **49**, 58, **71**, 136, 151, 153, 240, 258, 283.
Bagley, W. C., 178.
Baker, S. J., 151.
Balliet, Thomas M., 215.
Barnes, C. E., 179.
BEAN, C. HOMER, **78**.
Bell, J. Carleton, 178.
Bennett, Laura B., 117.
Biddle, John, 99.
BOUGHTON, ALICE C., **228**.
Bradshaw, Sarah E., 279.
Brelsford, Charles H., 45, 125.
Breuer, J., 141.
Briggs, W. R., 105.
Brill, A. A., 141.
Bruce, W. G., 105.
Brumbaugh, Martin G., 115.
Bryan, James E., 31.
Butler, Ralph, 271.
Cabot, Richard C., 26, *213*.
Calhoun, J. G., 149.
Cannon, Ida M., 26.
Cattell, J. McKeen, 60.
Chance, Burton, 280.
CHANCELLOR, WILLIAM E., **98**.
Chatfield, George H., 27.
Chittenden, R. H., 221.
Colsman, A., 151.
CORNELL, WALTER S., **134**, **161**.
CORNMAN, OLIVER P., 88, 136, **208**.
Cronin, John J., 62.
DEVEREUX, HELENA T., 29, **45**.
DOLL, LOUISE M., 29, **34**.
Donaldson, H. H., 184.
Dutton, S. T., 206.
Dyer, Frank B., 34, 62.
Elliott, Dr., 223.
Elliott, Grace, 277.
Emerson, R. W., 248.
FALKNER, ROLAND P., 31, 52, 58, 90, **174**.
Fletcher, Horace, 221.
Foster, N. K., 284.
Freud, S., 141.
Furness, William H., 3d, 179, 184, 225.
Fussell, M. H., 26.
Galton, Francis, 19, 244.
Graham, Edwin E., *24*.
GREENE, MARY BELLE, **125**.
Greenman, M. J., 184.
Greensfelder, B., 149.
Greenwood, J. M., 136.
Gross, O., 141.
Gulick, L. H., 151, 153.
Hagerman, James, 119.
Hall, G. Stanley, 60, 284.
Harris, William T., 164.
HEETER, S. L., **61**, **121**.
Heilman, J. D., 31.
Herbart, J. F., 227.
Herrmann, C. J., 61.
HINES, LINNAEUS N., **106**.
Holmes, Arthur, 184.
Huber, 15.
Huey, Edmund B., 148.
Hutchin, Elizabeth F., 32.
Hutchinson, Woods, 14.
Ittner, William B., 99.
James, William, 248.
Jastrow, Joseph, 60.
JOHNSON, GEORGE E., **14**, 24.
JOHNSON, RALPH L., **89**.
Jung, C. G., *141*.
Juvenal, 217.
Keicher, B. G., 110.
Keller, Helen, 198.
KIRK, EDWARD C., **217**, 253, 271.
KIRKPATRICK, E. A., **98**.
Koetelmann, 17.
Kohn, Marian, 270.
Ladd, G. T., 60.
Leslie, George L., 117.
Lookabill, J. B., 110.
Ludlum, S. D., 271.
McArdle, Mr. and Mrs., 182.
McGeath, Frank, 110.
Maguire, Margaret T., 45.
Mann, Horace, 10.
MARTIN, GEORGE H., **9**, 24, 31.
MILLER, CHARLES A. A. J., **136**.
Moore, Albert W., 117.
Moore, J. A., 105.
Münsterberg, Hugo, 214, 248.
Musser, J. H., 26.
Neal, A. O., 86.
Newsholme, 15.
Northrup, William P., *24*.
O'Connell, D. J., 23.
Ogilvie, Mary M., 26.
Perkins, Dwight H., 99.
Peter, 179.
Peterson, Frederick, 141.
Prichard, Margaret S., 32.
Rau, W. H., 193.
Reeder, Rudolph R., *281*.
Reichert, E. T., 184.
Riis, Jacob, 17.
Riley, Thomas J., 149.
Risley, S. D., 62.
Roosevelt, Theodore, 19.
Royce, Josiah, 248.
Saleeby, C. W., *244*.
Seashore, C. E., 178.
Schaeffer, Nathan C., 89.
SCHLEGEL, GEORGE S., **249**.
Sedgwick, William T., *114*.
Seguin, Edward, 217.
Sexton, Dr., 62.
Shields, Thomas Edwards, *21*.
Sisson, Edward O., 284.
Smith, Margaret Keiver, 31.
Smith, W. C., 164.
Sneed, C. M., 151.
Snedden, David S., *174*, 206.
Snellen, H., 69, 149.
Snyder, C. B. J., 99.
Solis-Cohen, Meyer, 26.
Solon, 13.

Spencer, Herbert, 10.
Stanley, Anna L., 60.
STECHER, W. A., **145**.
Stevens, H. C., 284.
Sturgis, R. Clipston, 99.
TAUSSIG, ALBERT E., **149**.
THORNDIKE, EDWARD L., 35, **58**, 136, **232**, **255**.
TOWN, CLARA HARRISON, 31, **141**.
True, Herbert F., 117.
Twitmyer, E. B., 184, 193, 226.
Twitmyer, George W., 31.
Tyler, Dr., 15.
Van Sickle, James H., 31.
Vosburgh, C. A., 149.
Wachenheim, 25.
WAGNER, ALVIN E., **164**.
Washburn, W. C., 34.
Washington, George, 214.
Watts, Isaac, 11.
Whipple, G. M., 151, 178.
Williams, Henry Smith, 247.
WITMER, LIGHTNER, 21, **29**, 165, **179**, 221, **225**. 248, **266**.
Worcester, Elwood, 20.

# INDEX OF SUBJECTS.

Adenoids, 268, 273.
Anatomical models, 27.
Articulation, 194.
Attendance, Irregular, a Cause of Retardation, 1.
  In the Primary Grades, 89.
Backward and Defective Children, A Class of, 125.
  Child, training of a, 78.
Baltimore (Md.) Class, Progress and Retardation of a, 136.
California school law, 117.
Child Welfare, Conference on, 120.
Children, How Two Hundred, Live and Learn (review), 281.
  of the Slums, 266.
  *see also* Backward and Defective C., Defective C., Delinquent and Dependent C., School C.
Cincinnati Special Class, A, 34.
Civics and Health (review), 114.
Clinical Psychologist for a State School for Feebleminded, 148.
  Psychology, *see* Psychology.
Criminal Law and Criminology, National Conference on, 119.
Deafness, 273.
Defective Children, 34, 45, 125.
Defectives in a Public School, Report of a Year's Work on, 45.
Degeneracy, 266.
Delinquent and Dependent Children, Report of Committee on (review), 86.
Dementia Præcox, The Psychology of (review), 141.
Dental Clinic of U. of Pa., 221, 271.
  Disabilities of School Children, 217.
  Dispensary, The Reading Free, 249.
Dullard, The Making and the Unmaking of a (review), 21.
Ears, Examination of, 67.
  *see also* Hearing.
Elimination, of Pupils from School, 58.
  Promotion, Retardation, and, 232, 255.
  Retardation and, in Mauch Chunk Township, 164.
Environment, 121, 266.
Eugenics, 244.
Examination of School Children's Eyes and Ears, A Plea for the Annual and Universal, 67.
Exercise, 18, 123.
Eyes. Examination of, 67.
  *see also* Vision.
Food, 78, 228.
Fresh Air, 16.
  in the Treatment of Disease, 25.
Health and Development Supervision, 117.
  Civics and (review), 114.
  Conservation of, in the School Room, 121.
Hearing, a Simple and Practical Test of, 96.
  Tests of, 149.
  *see also* Deafness, and Ears.
Hygiene, Personal, 11, 218.
  *see also* School Hygiene.
Imitation, 192, 225.
Indiana Superintendents, Report of Committee on Delinquent and Dependent Children (review), 86.
Intelligence, Tests of, 79, 185, 225.
Journal of Educational Psychology, 178.
Medical Inspection, 67.
  in the St. Paul Schools, 61.
  of Schools, A Lesson from, 9.
  Statistics, 118.
Monkey, A, With a Mind, 179.
  Intelligent Imitation and Curiosity in, 225.
Orthogenics in the Public Schools, 25, 29.
Parenthood and Race Culture (review), 244.
Parents, On the Training of (review), 176.
Penny Luncheons, 228.
Philadelphia School Report, 115.
  Summer Playgrounds in, 145.
Physical Condition of School Children, 134, 161.
  Defects, 149, 218.
    Effect of, on School Progress, 71.
Playground, The, as a Factor in School Hygiene, 14.
  Statistics for 1909, 284.
Playgrounds, Summer, in Philadelphia, 145.
Professorship of Psychology, The First, 60.
Promotion, Retardation, and Elimination, 232, 255.
Psychological Clinic, U. of Pa., 267.
  Clinics, Growth of, 283.
Psychology, Clinical, 30.
  of Dementia Præcox (review), 141.
  First Professorship of, 60.
Public Evening Schools, 215.
Reading (Pa.) Free Dental Dispensary, 249.
Reason vs. Instinct, 190.
Records for Public Schools, Application of Modern Methods to, 27.
  of the Physical Condition of School Children, The Need of Improved, 161.
Repeater, The Money Cost of the, 49.
Restoration of Children of the Slums, 266.
Retardation and Elimination in the Schools of Mauch Chunk Township, 164.
  Causes of, 1, 29, 63, 71, 89, 167.
  Promotion, and Elimination, 232, 255.
  Progress and, of a Baltimore Class, 136.
  Public Interest in, 283.
  Statistics, 87, 116, 167, 234, 259.
St. Louis Co., Mo., Visual and Aural Defects among the Public School Children of, 149.
St. Paul, Institute of Arts and Science, 147.
  Medical Inspection in the schools of, 61.
School Children, Dental Disabilities of, 217.
  Physical Condition of, 134, 161.
Schoolhouses, Our, 98.
School Hygiene, 98, 106, 121.
    The Playground as a Factor in, 14.
  Nurse as a Social Worker, 60.
  Progress, Size of Classes and, 206.
  The Effect of Physical Defects on, 67, 71, 157.
  Reports and School Efficiency (review), 174.
Size of Classes and School Progress, 206.
Social Education Meetings, 216.
  Service and the Art of Healing (review), 213.
    Department of the Hospital of the U. of Pa., 26.
Special Classes, in Cincinnati, 34.
    in Philadelphia, 45, 125.
Starvation and Mental Development, 78.
Sunshine, 17.
Teeth, *see* Dental.
Temperature, Indifferent, 26.
  School Room, Effect of, 25, 106.
Thermometer, The School Room, 25.
Tuberculosis, 15, 26.
Vermont school law, 70.
Vision, Tests of, 149.
Visual and Aural Defects, Prevalence of, among the Public School Children of St. Louis Co., Mo., 149.
Y. M. C. A., Evening Classes, 215.

## CONTENTS OF VOL. III.

### ARTICLES.

Irregular Attendance—A Cause of Retardation.—*Leonard P. Ayres.* 1

A Lesson from Medical Inspection of Schools.—*George H. Martin.* . 9

The Playground as a Factor in School Hygiene.—*George E. Johnson.* 14

Orthogenics in the Public Schools: an Editorial.................. 29

A Cincinnati Special Class.—*Louise M. Doll*..................... 34

Report of a Year's Work on Defectives in a Public School.—*Helena T. Devereux* ......................................... 45

The Money Cost of the Repeater.—*Leonard P. Ayres*.............. 49

Medical Inspection in the Saint Paul Schools.—*S. L. Heeter*..... 61

A Plea for the Systematic Annual and Universal Examination of School Children's Eyes and Ears.—*Frank Allport*............ 67

The Effect of Physical Defects on School Progress.—*Leonard P. Ayres* ................................................ 71

Starvation and Mental Development.—*C. Homer Bean*........... 78

Irregular Attendance in the Primary Grades.—*Ralph L. Johnson*. . 89

A Simple and Practical Test of Hearing.—*E. A. Kirkpatrick*...... 96

Our Schoolhouses.—*William E. Chancellor*...................... 98

The Effect of School Room Temperature on the Work of Pupils.—*Linnaeus N. Hines* ................................. 106

Conservation of Health in the School Room.—*S. L. Heeter*........ 121

A Class of Backward and Defective Children.—*Mary Belle Greene*. . 125

The Physical Condition of the School Children of the School of Observation, University of Pennsylvania.—*Walter S. Cornell*. . 134

Progress and Retardation of a Baltimore Class.—*Charles A. A. J. Miller* ............................................. 136

The Prevalence of Visual and Aural Defects among the Public School Children of St. Louis County, Mo.—*Albert E. Taussig*. . 149

The Need of Improved Records of the Physical Condition of School Children.—*Walter S. Cornell* ........................... 161

Retardation and Elimination in the Schools of Mauch Chunk Township.—*Alvin E. Wagner* ................................. 164

A Monkey with a Mind.—*Lightner Witmer* ...................... 179

Size of Classes and School Progress.—*Oliver P. Cornman*........ 206

The Dental Disabilities of School Children.—*Edward C. Kirk*.... 217

Intelligent Imitation and Curiosity in a Monkey.—*Lightner Witmer* 225

Penny Luncheons.—*Alice C. Boughton*.......................... 228

Promotion, Retardation, and Elimination.—*Edward L. Thorndike* ..............................................232, 255

The Reading Free Dental Dispensary.—*George S. Schlegel*........ 249

The Restoration of Children of the Slums.—*Lightner Witmer* ..... 266

## REVIEWS AND CRITICISM.

The Making and the Unmaking of a Dullard. By Thomas Edward Shields .......... 21
Report of Committee on Delinquent and Dependent Children including Truancy, Juvenile Courts, and Poor Relief. State Association of Town and City Superintendents. [Franklin, Ind.] .... 86
Civics and Health. By William H. Allen .......... 114
The Psychology of Dementia Præcox. By Dr. C. G. Jung .......... 141
School Reports and School Efficiency. By David S. Snedden and William H. Allen .......... 174
On the Training of Parents. By Ernest Hamlin Abbott .......... 176
Social Service and the Art of Healing. By Richard C. Cabot, M.D. 213
Parenthood and Race Culture. By C. W. Saleeby, M.D. .......... 244
How Two Hundred Children Live and Learn. By Rudolph R. Reeder .......... 281

## NEWS AND COMMENT.

Some Orthogenic Agencies .......... 25
The Schoolroom Thermometer .......... 25
Fresh Air in the Treatment of Disease .......... 25
The Social Service Department of the Hospital of the University of Pennsylvania .......... 26
The Application of Modern Methods to Records for Public Schools. 27
The Use of Anatomical Models in Courses in Psychology and Education .......... 28
The Elimination of Pupils from School .......... 58
The First Professorship of Psychology: a Correction .......... 60
The School Nurse as a Social Worker .......... 60
The Current Philadelphia School Report .......... 115
Health and Development Supervision .......... 117
Are Medical Inspection Statistics Comparable? .......... 118
National Conference on Criminal Law and Criminology .......... 119
A Conference on Child Welfare .......... 120
Summer Playgrounds in Philadelphia .......... 145
The St. Paul Institute of Arts and Science .......... 147
A Clinical Psychologist for a State School for Feebleminded .......... 148
A Journal of Educational Psychology .......... 178
Is Anything Wrong with the Public Evening Schools? .......... 215
Social Education Meetings .......... 216
Münsterberg Replies to Criticism .......... 248
Public Interest in Retardation .......... 283
The Growth of Psychological Clinics .......... 283
Playground Statistics for 1909 .......... 284

The Psychological Clinic

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# IRREGULAR ATTENDANCE—A CAUSE OF RETARDATION.

By Leonard P. Ayres,

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In the current discussion of backwardness or retardation among school children, it has been established that from one-quarter to one-half of all of the children in the schools are behind the proper grade for their age or have made less progress than they should in the time they have attended school. Whether classified by the criterion of age or by that of time in school, a large part of all of our school children are backward.

It has also been thoroughly established, as an immediate result of this condition, that many children, upon reaching the age of fourteen or fifteen years, find themselves in the fifth or sixth grade instead of in the eighth, and becoming discouraged, drop out. Thus it happens that a comparatively small proportion of the children entering our schools stay to complete the elementary school course. The result is that the amount of education received by the majority of young people is painfully small, and the educational aims of our school system are, in a large measure, defeated.

Up to the present time, studies of the phenomena of retardation and elimination have been chiefly confined to attempts at quantitative measurement. Most of the attempts that have been made to point out causes have been somewhat speculative in nature. Among the causes assigned, late starting, ignorance of the English language, innate dulness, and physical handicaps have been particularly emphasized. Less frequently, irregular attendance has been mentioned as a contributory factor. It is the purpose of the present article to present data showing that irregular attendance is a large, if not the largest, factor in bringing about retardation.

The principles underlying the commonly used measurements for enumerating the children reached by a school system are comparatively simple. The common measures are three, namely: *total enrolment, average enrolment, and average attendance.*

*Total enrolment* as commonly interpreted is a statement of the total number of children who have been in school during the year for any length of time, long or short.

*Average enrolment* is often stated by months. It is an expression of the number of children on the roll on the supposition that all remained during the entire period. It is, of course, always smaller than the total enrolment.

*Average attendance* is computed substantially as is the average enrolment. It is an expression of the number present on the supposition that all were present during the entire time. It is, of course, always smaller than average enrolment.

These three measures of attendance have come into so nearly universal use that they are generally accepted without question. A school or a system that reports 90 or 95 per cent attendance is thought to have made a fine record and the figure naturally leads the school authorities to feel that substantially every child was present and receiving the benefits of instruction every day.

How far this is from being the case is shown by comparing the average attendance with the total enrolment in some of our cities. According to the latest available figures, the relation between them in five of our largest systems is as follows:

| | Total enrolment | Average attendance |
|---|---|---|
| New York | 1000 | 751 |
| Philadelphia | 1000 | 695 |
| Chicago | 1000 | 823 |
| Baltimore | 1000 | 662 |
| St. Louis | 1000 | 813 |
| Kansas City | 1000 | 733 |

It is plain that total enrolment, the figure almost always used in stating the magnitude of our public school systems, while appealing effectively to civic pride, does not in reality give any accurate idea of how many children are present and receiving instruction each day.

In nearly all systems provision is made for temporarily dropping from the roll the name of any pupil absent for more than a few days. In some places the period of absence allowed before dropping the name is three days, in others, five, and in still others, ten. Thus the enrolment is automatically kept just a little ahead of attendance and a high percentage of attendance is assured. The fluctuations of attendance below 100 per cent really indicate nothing more than that absences of a day or two have been more or less frequent as the case may be.

It is obvious that such a system does not answer any question as to persistence of attendance. It does not tell us how many children have been present the entire year, and how many only a fraction of the year. It tells nothing about the attendance of an individual; whether he has been present most of the time or not. And yet, if a child has been in attendance only half of the time it would obviously be vain to hope that he could be regularly promoted and go on with his classmates. The fluctuations from day to day in a given school are in reality little more than an indication of the clemency of the weather or the attractiveness of outside diversions. When the weather is stormy, or the circus is in town, the attendance falls; when the sun shines and the circus leaves, attendance rises. The figures tell us nothing at all as to which pupils and how many are always in school and the number of those frequently absent.

It is probable that few school men realize how many of the children in their schools are present only a small fraction of the year.

According to the last United States census thirteen million children (13,385,628) attended school during the year 1900. Of these only nine million (9,814,040) attended as much as six months. This indicates that the question of the duration of attendance is well worth consideration.

A diligent study of school reports brings to light ten whose figures show the persistence of attendance of the pupils. These reports are from the following places: Columbus, Ohio (1907); Cleveland, Ohio (1906); Dayton, Ohio (1907); Kansas City, Mo. (1907); New Orleans, La. (1907); Porto Rico (1907); Springfield, Ohio (1907); St. Louis, Mo. (1907); Syracuse, N. Y. (1907).

The figures they give are not all computed on exactly the same basis. Cleveland and Porto Rico give figures showing the duration of enrolment, not attendance. It is impossible to discover from the report the basis on which the Columbus figures are computed. The seven other cities give figures showing the duration of attendance of all the children enrolled during the year. The figures showing the attendance in the white district schools of St. Louis are as follows:

| | |
|---|---|
| 200 days | 3,367 |
| 180 to 200 | 32,672 |
| 160 to 180 | 11,935 |
| 140 to 160 | 5,776 |
| 120 to 140 | 3,681 |
| 100 to 120 | 3,188 |
| 80 to 100 | 3,321 |
| 60 to 80 | 2,656 |
| 40 to 60 | 3,009 |
| 20 to 40 | 3,282 |
| Less than 20 | 2,844 |
| Total | 75,731 |

It is plain that the pupils who attended two hundred days were never absent, that those who fell within the one hundred and eighty to two hundred days group were in continual attendance with merely casual absences of a day or two, and that most, if not all, of the rest were absent for considerable periods, or else began late in the year or left early.

In order to compare conditions in the different localities some common basis must be established. The easiest way to do this is to reduce the data to relative figures on the basis of conditions among 1000 children. When the St. Louis figures are so reduced they appear as follows:

| | | |
|---|---|---|
| 200 days | 44 | |
| 180 to 200 | 431 | |
| 160 to 180 | 158 | |
| 140 to 160 | 76 | |
| 120 to 140 | 49 | |
| 100 to 120 | 42 | |
| 80 to 100 | 44 | |
| 60 to 80 | 35 | |
| 40 to 60 | 40 | |
| 20 to 40 | 43 | |
| Less than 20 | 38 | 1000 |

Now, it will certainly be conceded that we can hardly hope that pupils will be promoted unless they have been in attendance during at least three-fourths of the school year. It is desirable then to arrange our figures so as to measure attendance by fourths of the year. With attendance stated by groups of twenty days in a school year of two hundred days this is impossible, but if we rearrange the table, dividing each group in two so as to state attendance by groups of ten days, instead of twenty, we can divide the table into four groups. When this is done and each group divided in two we have a new table giving the same information in new form as follows:

| | | | |
|---|---|---|---|
| 200 days | 44 | | |
| 190 to 200 | 216 | | |
| 180 to 190 | 215 | | |
| 170 to 180 | 79 | | |
| 160 to 170 | 79 | | |
| 150 to 160 | 38 | 671 | 67.1% |
| 140 to 150 | 38 | | |
| 130 to 140 | 25 | | |
| 120 to 130 | 24 | | |
| 110 to 120 | 21 | | |
| 110 to 110 | 21 | 129 | 12.9% |
| 90 to 100 | 22 | | |
| 80 to 90 | 22 | | |
| 70 to 80 | 18 | | |
| 60 to 70 | 17 | | |
| 50 to 60 | 20 | 99 | 9.9% |
| 40 to 50 | 20 | | |
| 30 to 40 | 22 | | |
| 20 to 30 | 21 | | |
| 10 to 20 | 19 | | |
| 0 to 10 | 19 | 101 | 10.1% |
| | Total | 1000 | |

The dotted lines divide the year into fourths, leaving in the first division those who have attended more than three-fourths of the time, in the second those who have been present from one-half to three-fourths of the year and so on.

This explanation has been given to make clear the treatment to which the figures from all the localities have been subjected. The final results are presented in the following table:

PERSISTENCE OF ATTENDANCE OF PUPILS IN DIFFERENT CITIES AND IN PORTO RICO.

| | ATTENDANCE BY FOURTHS OF THE YEAR. | | | |
|---|---|---|---|---|
| | Less than one-fourth | Less than one-half | Less than three-fourths | More than three-fourths |
| Porto Rico ....... | 2.0 | 9.2 | 21.6 | 78.4 |
| Dayton, Ohio ...... | 4.7 | 12.1 | 23.6 | 76.4 |
| Grand Rapids ..... | 6.7 | 14.8 | 27.5 | 72.5 |
| Cleveland ......... | 8.6 | 18.3 | 28.0 | 72.0 |
| Springfield, Ohio ... | 6.5 | 13.7 | 28.2 | 71.8 |
| Syracuse .......... | 6.2 | 16.0 | 29.7 | 70.3 |
| St. Louis .......... | 10.1 | 20.0 | 32.9 | 67.1 |
| Kansas City, Mo.... | 10.6 | 20.8 | 35.1 | 64.9 |
| New Orleans ...... | 7.7 | 21.3 | 37.4 | 62.6 |
| Columbus, Ohio .... | 6.9 | 18.1 | 38.6 | 61.4 |
| Average ...... | 7.0 | 16.4 | 30.3 | 69.7 |

The figures for Porto Rico and Cleveland are based on length of enrolment and each would occupy a lower position in the table if the figures gave attendance instead. The basis of the Columbus figures is uncertain. The figures for St. Louis and New Orleans are for white elementary schools only.

The striking condition disclosed is that, with the exception of Dayton, in no city do as many as three-fourths of the children attend as much as three-fourths of the school year. This is a radically different showing from that made by the figures published by some of these same cities giving percentages of attendance ranging from 90 to 85. The published percentages do not disclose significant conditions. The figures giving attendance by periods of time do.

Only three of the cities publish figures which enable us to compare the number of children promoted with the number present at least three-fourths of the time. The results are as follows:

| | Per cent present at at least ¾ of the year. | Per cent promoted. |
|---|---|---|
| Springfield, O. ........ | 71.8 | 72.8 |
| Syracuse ............ | 70.3 | 64.9 |
| New Orleans ......... | 62.6 | 54.9 |

It is obvious that we have not greatly erred when we assumed that a low percentage of attendance was accompanied by a low percentage of promotions. The low percentages of promotion may surprise some, since we are accustomed to read in reports of from 80 to 90 per cent of the pupils being promoted. The reason for the low figures in our table is that they are the result of comparing the pupils promoted with the whole number enrolled, not with those enrolled on the last day of the year, which is the common basis.

We may now consider the relation which such low percentages of promotion bear to retardation and its correlated evil, elimination. It is apparent that if considerable numbers of the children entering school fail to be advanced regularly, the lower grades will become abnormally swollen by the damming of the stream of pupils passing through them. Experience teaches us, too, that in the upper grades the pupils who have advanced slowly and so are over-age will drop out before completing the course, thus making these grades abnormally small.

Certain general rules govern these phenomena. The first is that the number of children in the lower grades before the dropping out process begins will vary as the inverse of the rate of progress. That is, if we have four-fifths of the normal progress in these grades we shall have five-fourths of the normal number of children in each grade. To state it still again in terms of school administration: If we have a steady rate of promotion of 80 per cent we shall find twelve hundred and fifty pupils in the first grade for each thousand new pupils entering each year.

Another rule which is less exact and which varies in different localities, is that no matter what their progress we may expect about 10 per cent of the children to leave school upon reaching the age of thirteen, about 50 per cent of the remainder at fourteen years, and again about 50 per cent of these at fifteen years.

Where these conditions hold—and they exist as stated in many localities—if we assume a stationary population and no deaths, all the children entering school at the age of seven and a steady rate of promotion of 80 per cent, we shall have a grade distribution for every thousand children entering school as follows:

| Grades | Pupils | Grades | Pupils |
|---|---|---|---|
| 1 | 1,250 | 5 | 1,112 |
| 2 | 1,247 | 6 | 865 |
| 3 | 1,238 | 7 | 517 |
| 4 | 1,215 | 8 | 227 |

The notable characteristics of this grade distribution are that for each thousand children entering school we find twelve hundred and fifty in the first grade, and only 227 reaching the eighth. Similar conditions exist in many of our cities. Where they are better, it is usually because many children enter before the age of seven, or because fewer drop out at the ages of thirteen, fourteen and fifteen. More rarely it is because the percentage of promotion is higher.

To summarize then we may state our conclusion in four propositions:

1. Such figures as are available indicate that in our cities less than three-fourths of the children continue in attendance as much as three-fourths of the year.
2. Irregular attendance is accompanied by a low percentage of promotions.
3. Low percentage of promotions is a potent factor in bringing about retardation.
4. Retardation results in elimination.

In the foregoing, no attempt has been made to discuss the fact that a part of the short term attendance is due to the immigration and emigration of families into and from different cities. Undoubtedly many children begin the school year in one city and continue it in another, thus contributing to swell the figures of short term attendance in both places. It is undoubtedly true, too, that the process usually results in halting the child's progress for a time and often in causing him to lose a grade.

In a paper of this scope it is impossible to enter into a discussion of this factor or of other relevant factors, such as the frequency and effect of "double promotions", or the relative effect of short term attendance, on progress in systems promoting by whole grades only, and in those where the grades are divided into "A" and "B" sections. But such discussion of these minor factors is not necessary to an understanding of the importance of the lessons gained from a study of the attendance figures.

# A LESSON FROM MEDICAL INSPECTION OF SCHOOLS.

By George H. Martin, Litt.D.,

*Secretary State Board of Education, Boston, Mass.*

Medical inspection of school children has been continued long enough and has become sufficiently widespread to justify some rather sweeping generalizations. No large group of children has ever been examined without finding numerous physical defects and disabilities, serious enough not only to affect their school work but to form a real handicap in their after efforts to secure a livelihood.

These results have been so universal as to warrant the assertion that a community which has not provided through its proper authorities for a thorough-going inspection of its schools is guilty of criminal negligence.

The aggregate amount of discomfort and pain experienced by school children is enough to awaken universal sympathy. The hindrances to school advancement and the consequent waste of effort and of money are matters of serious concern, but the ignorance which lies back of it all and causes it all is a matter of much greater moment.

When by school inspection it is discovered that of more than 400,000 children examined in the schools of Massachusetts, 81,000 are defective in vision and 22,000 in hearing; when it is stated on reliable authority that 90 per cent of the school children of Germany have defective teeth and examination shows the same proportion in American towns; when 137 cases of adenoids are reported for a single city; when whole schools are infected with head-lice; we get much new light on school problems, on the subject of backward children, and, perhaps, of delinquent children.

Then we consign the unfortunates to the care of the family physician, send them to the public dispensary or the public clinic, or send the school nurse to look after the cases in the home and by these means we patch up a few. Some glasses are provided, some teeth cleaned and filled, some adenoids removed, some heads shaved and petroleumized, and many children begin to know the joy of living.

All this is good. It is worth many times what it has cost. But is it enough? Have school people done all their duty when they have admitted the school physician and the school nurse to the sacred precincts of the school room, when they have sent out the warning notices to the parents?

Supposing that all defects have been discovered and remedied, so that school life goes on without aches and pains. Must we go all over it next year and the next and forever? The Massachusetts law says that every child shall be examined annually for defects and disabilities. There is no statute of limitations. Is there any hope of limitation? Is there any mode of limitation? Or is the social mill to go on grinding out diseased and enfeebled children by the thousands indefinitely!

This is a more fundamental question than how we shall modify and adapt school work and school life to these defectives. That is an immediate and important question. But it deals only with symptoms, while it leaves the disease itself untouched. The disease is ignorance complicated by wilful neglect.

That the ignorance of the laws and conditions of health is less dense than it once was is undoubtedly true. The standard of intelligence in these matters has been slowly rising. When Horace Mann wrote his Sixth Report, in which he urged the necessity of instruction in physiology and hygiene, he satirized a school girl of the period:

> "Shall a young miss of sixteen, elated with the idea that she is just finishing her education, study rhetoric, and analyze scraps of the speeches of Grecian and Roman orators, when she does not know that the fumes of burning coal will destroy life; and thinks, because she swallows her food and inhales her breath through her neck, that they both pass on to one common cavity in the chest, and hence concludes that respiration and digestion are functions of the same organ? Neither of the above is an imaginary or an extreme case."

Perhaps we are warranted in thinking that such school girls are not to be found.

When twenty years later Herbert Spencer sent out his book on education everybody knew that his gibes at the English country gentleman were based on facts, and that he might have included American gentlemen as well. He said:

> "When the country gentleman has paid his daily visit to the stable, and personally inspected the condition and treatment of his horse; when he has glanced at his minor live stock and given directions about them; how often does he go up to the nursery and examine into its dietary, its hours, its ventilation?

"The raising of first-rate bullocks is an occupation on which men of education willingly bestow much time, inquiry and thought. The bringing up of fine human beings is an occupation tacitly voted unworthy of their attention."

There is no doubt that more thought is being given to personal and domestic hygiene. There are more bath tubs and tooth brushes and clinical thermometers in family use; more family dietaries are prepared with regard to the laws of health; architects are more willing to make concessions in the matter of ventilation of public and private buildings. Wells for the family water supply are more remote from sink spouts and privies and barn yards. Communities are more critical as to their water supply and the disposal of their waste, and there is more belief in the necessity and efficiency of pure food laws.

That this improvement is general is shown by the reduction of the number of cases of diphtheria and typhoid fever and tuberculosis,—preventable diseases.

More hopeful still is the changed attitude of mind towards diseases. Some cobwebs of superstition have been brushed away and some theologic mists have been dispersed. Probably nowhere to-day, even in the churches which adhere most closely to the ancient formulas, would we hear the lines by Watts found in all the old hymn books:

Diseases are Thy servants, Lord;
They come at Thy command.*

The educational forces by which this general uplift has come are many. The medical profession has devoted itself with the finest public spirit to the enlightenment of the people. The campaign against tuberculosis is a splendid example of the energy, the ingenuity and the self-sacrificing ardor of the doctors. The press has had a powerful influence in this direction. There are few magazines and few newspapers which do not discuss with great frequency and, on the whole, with intelligence and force, questions which pertain to public and personal health. Discussions in women's clubs and parents' associations of various kinds have helped.

To all these must be added the influence of the public schools. Physiology and hygiene have been included in the curriculum of many schools for many years, and some of the instruction given has been well selected, well arranged and well presented. To this extent the schools are entitled to credit.

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*This hymn was marked, "For Sickbed Devotions."

But when we have admitted all this and congratulated ourselves upon the improvement, the disclosures made through medical inspection still confront us and call for action.

The lesson which I have learned is that, in addition to all the other forces making for a better understanding of health conditions, it is the imperative and immediate duty of the schools of all grades to broaden and make more vital their teaching of physiology and hygiene.

Compulsory laws exist in nearly all the states, making instruction in these subjects obligatory, but unfortunately the circumstances under which these laws were enacted left the conservative school people everywhere irritated and cold. The law in its purpose and scope was too narrow, limited as it was to the effects of alcohol and narcotics, and the methods prescribed in most states tended to make the work abortive.

The opportunity now exists, and the results of medical inspection furnish the argument, for a new propaganda in favor of health instruction. It should begin in the lowest grade, because the little children not only need to be taught how to care for themselves, but how to care for children still younger. The majority of children of the poorer families, especially of the more recent foreign immigration, have the burden early laid on them of "minding the baby". The following facts are typical:

In a class of fifty children, thirty have the daily care of younger children.

That such care is inevitable is shown by the fact that, in the families represented by these fifty children, thirty-four have four or more children.

The instruction here needs to be simple, direct and sympathetic, absolutely free from technical anatomy and technical physiology. To instruction should be added insistence upon practice, for the end sought is the early formation of right habits. The results of the right sort of teaching will not be found in answers to questions, but in clean hands, faces, teeth, bodies and clothes, in clear eyes and a responsive brain, in a frame erect and elastic, with all the signs of an abundant supply of good red blood. The teaching will also show itself in the luncheons the children bring and in the way they spend their pennies.

In the higher grades the same ends are to be sought, but the instruction should be less purely dogmatic, and knowledge of the organs of the body and their function should furnish a rational basis for hygienic rules. Anatomy should still be kept subordinate. The hygiene of the home and its relation to personal health should be taught. The personal habits of the pupils must still be an object of the teacher's success.

It ought not to be true in any school, as the reports of a school physician show was true in one set of schools, that the pupils in every grade up to the senior class in the high school had on an average four or more decayed and decaying teeth, and the teachers did not know it.

It ought to be said to all teachers and said with emphasis,—"These things ought ye to have done at the risk of leaving some other things undone." We hear much about "essentials" in school education. A sound body kept sound by right living is the essential which underlies and conditions all the rest.

In the high schools now a most anomalous condition exists. Not only is physiology not included in the course of study in many high schools, but when it is included it is not required of college preparatory students. So that these people who are to represent the superlative culture of the times are left in ignorance of the means by which they acquire all their learning. They are expected to translate the maxim of Solon, Γνῶθι ςεαυτον into "Know thyself," and never to obey it. The instruction is less intelligent than that of Mr. Squeers: "Bottiney, noun substantive, a knowledge of plants. When he has learned that bottiney means a knowledge of plants, he goes and knows 'em."

No school system can justify itself, if it fails to require as a major subject in high schools the study of human physiology. It should be so based on the other sciences and so correlated with them as to appeal to the intelligence of the most advanced students, and its relations to sociology should be shown through public hygiene to be so intimate as to fill it with genuine human interest.

Two hindrances have been found to the successful prosecution of this work in the schools. The text-books have been poor, and many of the teachers uninstructed. Text-books are improving and normal schools are making personal and school hygiene more prominent in their training. Much, however, remains to be done.

To-day the physicians, general and special, are more alive to the needs of the times than are the school people. No permanent results of the present agitation for better sanitary conditions, domestic and public, can be hoped for unless the schools coöperate with all the other agencies. The universal need is for a higher order of intelligence respecting all the things that make for health, and the foundation of such intelligence must be laid in the schools.

# THE PLAYGROUND AS A FACTOR IN SCHOOL HYGIENE.

By George E. Johnson,

*Superintendent of Playground Association, Pittsburgh, Pa.*

Scarcely twelve months ago the whole country was shocked by a disaster to school children so horrible in its details that men in distant cities wept in street-cars as they read the account in the morning papers. Immediately, everywhere, school buildings were inspected and hundreds of thousands of dollars were expended in alterations and fire escapes.

Since then, in the city of that sad disaster, and in every city of equal size, many times that number of children have perished and scarcely a comment has been raised. It would take four disasters like that at Cleveland every school day in the year to keep pace with the march of death among the school children of our land.

During the coming year more than one hundred thousand school children will end their young lives, the bloom of babyhood scarcely yet faded from their cheeks, and tens of thousands of Rachels will mourn for their little ones and not be comforted.

During the next ten years millions more will lay the foundation of weak constitutions to succumb to some great white, black, red or yellow plague before life's meridian has been reached.

To those who rejoice in the living, Dr. Hutchinson's cheering declaration that "it isn't so very dangerous to be alive" will bring its reassurance, but to those who mourn for the dead, it will lend an added pathos. The unnecessary loss is the hardest to bear. And this loss, inconceiveably great as it is, is largely within our power to prevent. For not only is it not so very dangerous for a child from five to fifteen to be alive, it is the natural and easy thing for him to remain alive,—if he has a fair chance.

These are the years when the life forces are at flood. It is as if Nature endeavored to repeat in each young life at this age the observance of the Passover and had sprinkled upon the gate posts of these ten hopeful years the sign of immunity that the Angel of Death seeing might pass by. We school men often congratulate ourselves that the years which constitute the school age for the great majority of children are the years when the death rate is the lowest. And yet the aggregate preventable loss through death, in these most favored years, is enormous, and the sad processions that follow abandoned hopes to the grave outnumber in the aggregate the armies of the world.

But there is another and far more serious loss than this. It is not the death rate during the school age, however great or small, that is the significant thing for us. The significant thing is whether in these years of Nature's smiles, strength or weakness is being laid by for future years. We are learning more and more certainly every year that our skulking foe, the microbe, of whatever tribe, strikes when a man is down. Patiently he bides his time, gathering his forces in secret until the time to strike. No better illustration could be given than that of tuberculosis. According to Newsholme, only three children in ten thousand, from five to fifteen years of age, die of consumption, but from fifteen to forty-five more than one person in four dies of this dread disease. Speaking along this line, Dr. Tyler says: "It would seem highly probable that the increased death-rate of girls at eighteen and thereabout from consumption and other diseases of relatively slow action is the culmination of an attack begun at thirteen or fourteen. If we are to diminish this death-rate, we must fortify the girl against the periods of greatest weakness when she is most likely to receive hospitably the germs of fatal diseases. To accomplish this we must not wait until the twelfth or thirteenth year, but meet the difficulty in childhood." Huber, also, in his work on "Consumption" says: "There is the long period of latency in which, if the child be well nurtured and if he live hygienically, he will be likely to overcome such tendency to disease as he may have begun life with."

When at some future time posterity looks back upon the conditions that prevail in our day, it will behold no darker picture, no more disgraceful thing than our weak surrender of our children to sickness and death. What excuse can then be offered for the fact that even in this land, more than one-half of all the children born into the world die before they have reached man's estate; that seventy per cent of school children suffer some physical handicap, more or less serious, at the very threshold of life's opportunities; that our schools not only do not fortify the children against known enemies, but actually betray them, in their innocence, to their deadly foes?

To the American School Hygiene Association belongs the great credit of an organized effort to free us from this national error, but may I present the humble claim that the advocates of the playground offer the most promising single means for its accomplishment?

From amœba to man the essential conditions to life and health have been few and plain. Through all the ages of that slow ascent, but with varying emphasis, these have been food, air, sunshine, exercise. Upon the supply of these in proper kind and amount depends the health of amœba, worm, fish, bird, dog or man.

Omitting the first of these for obvious reasons, let us consider the importance of each of the others in school hygiene and the office of the playground in supplying them.

*Air.* The playground is the only place where a school child gets air in the proper amount and kind, the only place where he obtains full and complete aeration of the blood. A despicable fraction of school rooms have standard ventilating apparatus, and the rooms that have do not always adequately benefit thereby. I have personally tested a score of school rooms almost under the shadow of the capitol of a state that has the best of existing laws, and found the supply of air to equal the standard in only two of the rooms and in some it fell to less than one-fourth of that amount.

But even could ventilation be perfect in a school room, there would not be the same aeration of the blood in a seated studying child as in a child on the playground. There must be the exhilaration of joyous exercise, the strengthened pulse, the quickened, deepened breathing, the full chest of sustained effort that drives the air to the very apexes of the lungs, to meet the needs of the growing child. The school room may be made less and less objectionable, but so long as it remains a school room it can not escape the imperative need of the playground as a factor in school hygiene.

As is well known, it is not only the lack of oxygen but also the presence of organic poison in exhaled air that makes ventilation so important. It is a fact noted by biologists that all animal life excretes a poison destructive to itself. This is as true of the single-celled animal as of higher life. Bacteria may thrive luxuriantly for a time in culture media, but if they are not transferred to fresh culture media they pass into a period of lessened activity and finally die poisoned by their own excretions. A child's body is an accumulation of a vast number of cells, each of which by its very functional activity likewise excretes products so poisonous to itself and the system generally, that accumulation beyond a certain limit results in death.

Now nature has gradually placed more and more emphasis upon this cleansing process. If you trace the evolution of the vital organs from the single cell to man, you will find a general increase in the number of the excretory organs. The newer organs have developed as supplementary to the older, and all together they form a coöperative system, a weakness in any part of which places an added burden on the rest. Nature here gives us no uncertain hint as to the needs of the child. Playground activities not only purify the blood through the increased activity of the lungs in the pure air of out-of-doors, as the activites of the school cannot do, but also stimulate the healthful activity of all the excretory organs, preserving a well balanced system.

*Sunshine.* "Where the sun does not go, the doctor does" is an Italian proverb quoted by Koetelmann. Try as we may, we can not get the sun sufficiently into all our school rooms, and if we could we would shut it out again as soon as we let the children in to study, because we say it hurts their eyes.

Where then shall the children bathe in the sunshine as they should, but on the playground? We do well to debar contagious diseases from the schools, but let myraids of bacilli fly over our children's clothing and the most malignant perish in a short time in the joy and the sunshine of the playground. Few disease germs have been discovered that can survive even for one hour the streaming sun on the face of a laughing child.

You remember the experiment with the tadpoles. They were placed away from the sunlight for thirty days and during all that time ceased to grow. Returned to the sunlight, they resumed their growth and advanced farther in one day than in all the previous thirty. Placed once more away from the sunlight and again returned to normal conditions, they grew to stunted froghood. Just such an experiment, Society tried with babies in the dark rooms of New York's tenements, and every baby, almost without exception, born and kept in those rooms, died. But when Jacob Riis tore down the windowless walls and the light of Heaven streamed in, the babies began to live.

In our cities and larger towns everywhere, we are still repeating, in a measure, the same experiment, and place our children, like the unfortunate tadpoles, in darkened homes, in narrow, shaded, and smoke-enveloped alleys, and in school rooms into which the sun seldom if ever enters,—nay! often in school rooms lit even in the middle of the day by natural or artificial gas. Bring to these little ones medical inspection, examine their eyes, remove their adenoids, protect them from measles and all the rest, but shall we not also provide a playground, where for a part of the day they may bathe in the sun as God Almighty has said they must, if they are to live!

*Exercise.* I have just examined the indexes of two famous books on school hygiene and in them was no such word as exercise. But exercise is life, and the absence of it is the sure sign of death. By exercise came evolution. Exercise shaped the body, determined the vital organs, built the brain. By exercise the child takes possession of his inheritance from the race. To him it is the past, the present, and the promise of the future.

But that exercise no man can dictate, no teacher devise, no scholar fully define. It comes forth unbidden from the child, declares his nature, discovers him to himself, defines his relation to his mates, shows him the world. It is his play, it is himself. Can the school alone do this, be this? In the long process in which exercise shaped the body and built the brain, there was determined for all time the path by which the child must come into his own. In that shortened process we call childhood, every faculty, every power, every organ that fails to receive its due exercise shrivels, and health by so much suffers and by so much the man becomes less a man. It would require a book to speak in full of the exercises of the playground that meet the needs of health, physical, mental, moral, æsthetic, social health, for all these are elements in the health of the body, as we all have come to understand. But in many respects, in the very nature of the case, these exercises are impossible in the school, they are possible only on the playground.

Once upon a time the people of a certain city really believed what I have just been trying to say, and when the question arose as to whether they should build a great public school or open a playground, it was decided to open a playground. Now it came to pass, in the course of years, that the citizens of that city advanced so far beyond the rest of the human race, that, in all the centuries since, the nations that have gone on building public schools and neglecting to open playgrounds have not been able to catch up with them even to this day.

This is fact, not fancy. At seven years of age the Athenian lad entered the palæstra, which was essentially a playground. All the first and better half of the day was spent in gymnastics, dancing, games and play. In the afternoon there was singing, some writing (the beginners wrote in the sand box or in sand strewn upon the ground), some reading, all in the open air, and then came a long period of play again. Such was the schooling of the Greek lad up to the age of ten or eleven and it did not differ essentially up to the age of sixteen except in the severity of the exercises. And yet, the world has not ceased to marvel at the results of the Greek education. It produced the highest type of man, physically and intellectually, that the world has ever seen, which Galton says was as far in advance of the modern Englishman as the modern Englishman is in advance of the native African. In physical beauty, courage and patriotism, in philosophy, literature, architecture and art, the Greeks have been the unsurpassed models of the ages and are still the inspiration of our schools to-day. But they placed the emphasis upon hygiene, exercise, games and play, which we neglect, if not ignore. They cared for the strong and sometimes left the weak to perish. We care tenderly for the weak and often leave the strong to perish.

This also is fact, not fancy. In the state where I had the privilege of acquiring most of my experience in educational work, a child to obtain the best educational advantages must be blind, deaf, feeble-minded, incorrigible or a truant. Then he is given exercise, playgrounds, gymnasia, baths, fresh air in abundance, gardens and play-shops. The great majority of normal children get along the best they can without them. And now in Pittsburgh they have an open-air school for children with a tendency to tuberculosis. So consumption seems to be another of the list of ills, one of which a child must have in order to enjoy the best educational advantages. I am not disapproving of this care for the weak. I believe in it with all my heart, but this we should have done and not left the other undone. There are thousands and thousands of children in the regular schools of Pittsburgh who have no place to play, no recess, no really fresh air to breathe, little sunshine and less genuine life-giving exercise.

We have reversed the order of importance in education as it was observed by the Greeks. The Greek education was essentially a playground education and the education most nearly approaching it to-day is that supplied by the playgrounds of America. To that classic demonstration of the educational value of the playground has been added in our day an avalanche of testimony from biology, physiology, anthropology and sociology. Of the $10,000,000 playgrounds of Chicago, President Roosevelt says: "They are the greatest civic achievement the world has ever seen."

To sum up:

First, we do not take care of our children.

Secondly, we need to improve our care along four lines, namely better food, better air, more sunshine, better exercise.

Thirdly, in the very nature of the case, the playground alone can adequately supply the last three of these to the child.

Fourthly, this is no new experiment. We have the classic playground along with classic literature, architecture and art.

Finally, just as we have awakened to the fact that the school provides but a small fraction of a child's education, and that the environment, which includes everything that comes into the child's experience, is teaching him every waking moment of the day (perhaps every sleeping hour of the night, if we agree with Dr. Worcester), so we have come to understand that the activities of the school provide but a small fraction of the exercise necessary for the health of a child in this larger meaning. In the long process of race development, every organ and instinct with which a normal child is born has been tried and found good, has been refined and passed on, and some yet higher function, some yet nobler conduct shall spring from their roots. Not in the school but on the playground can these deep instincts of workmanship, imitation, rivalry, coöperation, find their true and genetic expression and build more stately mansions in the soul as the swift seasons roll. These instincts calling from the deeps of the child's nature are not voices calling him astray, or to delay his upward progress. They are the voices saying to him and to the race:

"Build thee more stately mansions, O my soul,
As the swift seasons roll,
Leave thy low-vaulted past,
Let each new temple, nobler than the last,
Shut thee from Heaven with a dome more vast,
Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea."

## REVIEWS AND CRITICISM.

*The Making and the Unmaking of a Dullard.* By Thomas Edward Shields, Ph.D., LL.D., Associate Professor of Psychology in the Catholic University of America. Washington, D. C. The Catholic Education Press, 1909. Pp. 296.

This little book bears eloquent testimony to the possibility of training backward children, for it is the autobiography of one who was himself a backward boy. The introduction tells us, "The story in its entirety is a faithful transcript of the record that was burned into the heart and brain of the omadhaun and read by himself years after he had fought his way back to the company of normal and intellectual men." The later fame and high position of the dullard give a vivid interest to his story. It is modestly offered as a contribution toward the solution of the backward child problem. To give it popular interest, it is cast in the form of a dialogue,—not the frozen utterances of some Philomathus, Theophile, or Philosoph, but the lively eloquence of the Studevans, O'Briens, Russells, and Shannons. They sit around the wood fire and talk modern psychology, humanized by the interest in school-boys and girls. They know what is going on, discuss familiarly THE PSYCHOLOGICAL CLINIC, and note with approbation Dr. Witmer's work for the last thirteen years at the University of Pennsylvania in the training of backward children, as well as other movements of like nature.

The story of the dullard gets well started in Chapter VII. The first stage is downward,—and three years of school training result in turning a fairly bright and healthy boy into an imbecile. The trouble began in jumping the pupil from Wilson's Second Reader into the National Third Reader in order to save the teacher the work of holding an extra class session. From that moment the "humiliation of defeat began to settle into a permanent distaste for reading and a permanent discouragement concerning my ability in that direction." Although there was for a time a fair degree of efficiency in other branches, the failure in reading gave rise to a growing "sense of shame and discouragement." This, coupled with the teasing of the other boys, led to the removal of the dullard from school at the age of nine.

At that time he was growing rapidly. At thirteen he weighed one hundred and sixty pounds. At fourteen he was five feet ten inches tall, his adult height. The lack of balance between physical growth and mental development, described by the author as "alternating phases," was in his opinion the real cause of his backwardness, augmented by bad pedagogical methods.

Rapid physical growth made it possible for the overgrown boy to be put to work on the farm. This proved his salvation. Good heredity, a strong body, five meals a day, open-air work, deep sleep, and mental rest were his, until he awoke from his long intellectual slumber and began his own eduation at sixteen. A brief experience of school at the age of thirteen had meanwhile served to establish more firmly the belief in his hopeless stupidity.

His self-education began with perceptions of numbers, not as abstract relations, but as bushels of wheat, sacks of corn, fence boards, and barn timbers. His study of mechanics began with an "old oaken bucket" swung from an iron pulley, progressed through the grindstone stage to the mechanism of a reaper, to the profound discovery that the turning of a small gear moved a larger one more slowly but with greater power, and finally broke out into an ecstasy of delight over his invention of a stump-puller. The success of the stump-puller, though reckoned of little merit by the family, lodged in the dullard's mind and stuck there. That success brought self-reliance; it nerved him to withstand an elder brother's domination; it fired him to go to the city alone and visit every machine shop and ask to be taken on as an apprentice.

That he was refused is not to be wondered at, for at sixteen his vocabularly was so small that he could not tell what he needed to finish his machine, and had to go all the way to the city in order to point out the ropes, chains, pins, gears, etc., which he required. The family's fondest hope was that he might some day be able to support himself by farming. Nobody talked to him seriously. He had forgotten all he had learned in school. He could not multiply, though he could add a little; and he could neither read nor write.

He learned to read only through heroic effort, stimulated by his curiosity to know the remainder of a thrilling Irish story, which his brother refused to continue reading to him, leaving the robbers in a cave in the midst of a highly exciting mêlée. However, the print was large, the haymow offered a safe retreat, and there in secret the "omadhaun" laboriously took his first real lesson in reading. The *Fire Side Companion,* and *New York Ledger* furnished forth his further instruction, after a prelimiary course in "Buffalo Bill," "Rosebud Bob," and the "The Giant of the Gulch." Of these he says, "These stories were short; the print was large; the paper poor. In fact they were cheap in every sense of the word. The language was ungrammatical and vulgar; the moral tone was low; but they were all action . . . There was not a dull line for me nor a passage above my comprehension." Eventually the book "Self Raised, or From the Depths," gave him the final and mighty impulse which bore him out upon the course of intellectual and moral training which resulted in an honored and useful life.

Dr. Shields in his introduction voices the growing protest that is being heard throughout this country against limiting the work of the public school to the "three R's." He shows that the school must take the place of the industrial home of the family, which has been swept away by modern economic conditions. Vocational studies must be added to the school curriculum. His story of the dullard's progress lends strength to this modern movement in education. We are more doubtful of his attitude concerning the value of race customs and denominational training. In a preface to the book, Dr. O'Connell, Rector of the Catholic University, calls attention to the earnest efforts which the Catholic Church has made from the earliest times to bring the blessings of education within the reach of those to whom nature seemingly refuses the power or the opportunity of learning. As Dr. O'Connell observes, we have enjoyed in the past the benefits that accrue from the earnest efforts of the Church to alleviate the miseries of humanity. What we have missed in the past, and what we must strive for to-day, is to bring scientific knowledge to bear upon the solution of the problem. Neither in this country nor abroad have church schools or charity schools been distinguished by a sounder scientific foundation than non-denominational schools. If the church and charitable institutions are able to sympathize with and procure the best that modern science affords, they may be expected to do all the better work by reason of the enthusiasm and social interest that oftentimes characterize the religious impulse.

A. H.

## NEWS AND COMMENT.

### *Some Orthogenic Agencies.*

The current number of THE PSYCHOLOGICAL CLINIC emphasizes some general factors in the treatment of retarded and normal children. Mr. Ayres calls attention to attendance, Dr. Martin to preventable physical defects and adverse environmental conditions, and Mr. Johnson to the necessity of playgrounds. These are orthogenic agencies of great importance.

### *The Schoolroom Thermometer.*

It is difficult to give concrete definiteness to the regulations for the enforcement of hygienic conditions in the schoolroom. This may be done with respect to the temperature of the schoolroom through the employment of a thermometer. The principal of every school should receive authority from the Board of Education to hang a thermometer in every room and to require the grade teacher to keep the temperature between 67 and 70 degrees Fahrenheit and to announce that a teacher is liable to discharge if the temperature is allowed to exceed 70 degrees. It is easy enough to open windows and it is better to have a surplus of heat and open windows than to have a deficiency of heat. This regulation would teach hygiene more effectively to pupils and teachers than any amount of text book instruction.

### *Fresh Air in the Treatment of Disease.*

In the February number of *Archives of Pediatrics* are two good articles on this subject, the first by Dr. Edwin E. Graham, professor of children's diseases in the Jefferson Medical College, Philadelphia, and the second by Dr. William P. Northrup, of New York.

Dr. Graham reports his experience with the fresh air treatment, which he introduced eight years ago in the children's wards of the Philadelphia Hospital. Before that time the children did not do well. He says, "A frail infant, perhaps premature and under normal weight, would gain for a few weeks at best, then remain stationary in weight, finally gradually lose weight, begin to have diarrhea, and die. Robust infants on admission often did well for three months. The same symptoms after this period began to develop as in the infants admitted in a condition of malnutrition, and in spite of my best efforts, many of these robust children died. The same type of infants in my private practice were almost without exception doing well. Convinced that neither the food, nursing nor general care of these hospital infants was at fault, and that the so-called hospitalism was nothing but lack of fresh air and lack of out-door air, I ordered these children, in the month of January, placed for two hours each day on the fire-escapes."

The infant mortality decreased immediately. For the next two or three years, during Dr. Graham's service in January, February, and March, he had the children placed in small hammocks in the yard for several hours a day, unless it was raining or snowing. Five years ago the children's wards moved into their new building, where "the infants practically have an abundance of fresh air day and night, and they do as well as could be hoped for."

In the new Jefferson Hospital, where Dr. Graham is on duty all the year round, he has a roof garden for the children, and the results are most encouraging. He has had great success in applying the fresh air treatment in cases of pneumonia and typhoid fever. The rooms where these cases are kept have large windows on two sides and an open door on a third side. The children are well wrapped up and supplied with hot water bags, and the door and windows are kept open night and day, excepting for a few moments when it is necessary to uncover the patients for bathing, etc. Many other diseases have been successfully treated in a similar way.

In private practice Dr. Graham has had equally good results. "On my first visit to the child," he says, "I, if possible, instill into the mother the principle that fresh air differs from impure air as much as fresh milk from impure milk. Once gain her consent, and the treatment is an assured fact. I am more than surprised to see the willingness with which most mothers, no matter what their social status may be, enter into the treatment." He quotes Wachenheim as authority for the statement, "Indifferent temperature feels neither warm nor cold, and is most restful. In children, indifferent temperature is about 75 degrees F. in summer in summer clothing, and about 65 degrees F. in winter in winter clothing, and varies with age and vitality. Temperatures above indifferent are not sedative, but cause a continuous stimulation that is harmful if prolonged, ending in exhaustion."

In conclusion he says, "Let us all join hands and preach fresh air; vote for open squares, endorse roof gardens, have adenoids and tonsils removed, and if we are willing as a society [the American Pediatric Society] to endorse and work for the fresh air treatment with the same zeal and enthusiasm as we have worked for fresh and pure milk, our results will be as great a success as has been secured by our milk enthusiasts."

Dr. Northrup would like to see the term "fresh air" made more explicit, and suggests, "If it ever is entered in the U. S. P. [United States Pharmacopeia] and standardized for therapeutic use, it should read something like this. 'Open air, or cold, fresh, flowing out-door air,—dosage regulated to individual needs.'" He emphasizes the point that in fresh air treatment, "*The patients and nurses should be made comfortable all the time,*" and tells how they make beds out-of-doors at the Presbyterian Hospital. He concludes by saying, "*Open-air treatment has killed no one, has injured no one, has helped everyome, and determined a cure in a few.*"

### *The Social Service Department of the Hospital of the University of Pennsylvania.*

On January 21, 1909, the committee appointed by the Medical Faculty of the University of Pennsylvania submitted to the Board of Managers of the University Hospital the first annual report of the social work of the out-patient department of the Hospital. The chairman of this committee is Dr. J. H. Musser, who procured the funds necessary to carry on the work and first undertook its establishment in the fall of 1907.

This work, following the plan of the Social Service Department at the Massachusetts General Hospital under the guidance of Dr. Cabot, was made possible by the contributions of a friend interested through Dr. Musser. The services of Miss Mary M. Ogilvie were secured as social worker and director. Miss Cannon, one of the leaders in similar work in Boston, gave two weeks of her time and energy in starting the work in Philadelphia. Miss Ogilvie is assisted by a staff of volunteer social workers. Dr. Fussell and Dr. Meyer Solis-Cohen are the physicians in charge of this department of the University Hospital.

The report is an extremely interesting and suggestive document of nineteen pages. The work of the first year was chiefly taken up with tuberculosis. A tuberculosis class was established and patients were instructed in keeping records of their daily doings, including the character and amount of food taken, the number of hours spent in the open air, the hours of sleep, the amount of exercise or work, the number of bowel movements, the amount and character of the cough and expectoration, their spirits, etc. The patients provided themselves with clinical thermometers and took their temperature three times a day, recording it in a book. They obtained from the hospital at cost price Japanese napkins, paper bags, sputum cups of paste board and holders. The class meets once a week; instructive talks are given by the leader and also by the patients themselves. The records are gone over and are criticised by both the class leader and the members. "The benefits of this method are many. The patients become proficient in giving talks on the prevention of tuberculosis and the management of the consumptive and learn to repeat accurately to their relatives and friends what they have learned in the class, thereby carrying on an active educational campaign." In some instances the husbands of patients have repeated the talks heard at second hand to the men at their places of business. This has resulted in the ventilation of the work room and in the admisssion of fresh air to the rooms of fellow workmen. Some of the patients visit other persons known to have consumption or supposed to have a cold or chronic cough and have given them valuable instruction. The influence exerted by these optimistic, enthusiastic, improving tuberculosis patients on the people whom they meet is of inestimable value.

This education of the community alone would be sufficient justification for the establishment and maintenance of a social service department, but the direct result of this treatment is shown in the history of improvement in a large number of cases. "Another case, who, in addition to his pulmonary lesion had two different severe attacks of bone tuberculosis with necrosis, now works eight hours every day and during the summer plays on a ball team every evening and Saturday afternoon."

In addition to this work Miss Ogilvie visits the homes of the patients, giving instruction in hygiene and the preparation of food; and often discovers new cases, mostly children, while visiting in families of patients referred to the department.

The social work department refers cases to the proper agencies and acknowledges assistance received from them. These include the Society for Organizing Charity, Wayfarer's Lodge, the Protestant Episcopal City Mission, the Society of United Hebrew Charities and the Children's Bureau. Various agencies are beginning to rely upon the social service department for assistance in the medical and social treatment of their cases. The report ends with a plea for a combined effort in solving some of the complex problems of charity and civic life by such agencies as the Medical Department, the Wharton School, the University Hospital, the University Settlement House, and the Psychological Clinic conducted by the Psychological Laboratory of the University of Pennsylvania.

### *The Application of Modern Methods to Records for Public Schools.*

Readers of THE PSYCHOLOGICAL CLINIC who have followed the various articles appearing therein from time to time on the subjects of retardation, and elimination of pupils from school, will have formed a very real appreciation of the necessity for more complete and available records of school data, and will know how to appraise the work reported in Mr. George H. Chatfield's article in the February number of *School Work.*

Committees from the Association of Women Principals and from the Principals' Association of the City of New York have joined forces in an effort to introduce a more satisfactory system of keeping and filing the school data which under the present system are hidden away so securely that they are for all practical purpose lost. Mr. Chatfield, as chairman of the two committees, gives an account of their recommendations.

They have proposed radical changes in the methods of keeping most of the records. The most important suggestion is that in regard to the "Pupils' Record." This record is kept on a card 5 x 8 inches, blue for boys, white for girls. On one side space is provided for the name, address, date and place of birth, and school records in regard to grades, attendance, lateness, conduct, work, special aptitudes and deficiencies for the entire school life of the individual child. The other side is devoted to the record of the physical examination made under the auspices of the Board of Health. Two such cards are filed for each pupil, one set of cards being arranged alphabetically, one according to classes. When a child is transferred from one school to another one card is forwarded to the school and the other transferred to a file of discharged pupils. Thus the record of any child who has ever attended a school may be found at once in the files of that school.

This is only one item in a very comprehensive system of record keeping which aims to present data in reference to pupils, teachers, books, supplies, etc., in such a clear, simple, and available way that their value for practical school use and for statistical purposes will be much enhanced.

The system seems to have been carefully worked out and will doubtless prove of great practical value to the New York schools.

### *The Use of Anatomical Models in Courses in Psychology and Education.*

The laboratory method of instruction had brought with it a recognition of the importance of models, specimens, and similar demonstration material. When psychology achieved an independent position in our leading universities, the employment of models became a matter of course to demonstrate the anatomy of the nervous system and sense organs, and the comparative development of the human and animal brain. The extent to which large demonstration models, and models for the individual use of students are employed, even in educational courses, at the present day, is scarcely appreciated. In addition to a number of medical departments and eight universities, among them the psychological department of the University of Pennsylvania, using the new Ward model of the spinal cord, this model is to be found in at least seven normal schools, the Philadelphia Normal School for Girls, the State Normal School at Bridgewater, Mass., the Colorado State Normal School at Greeley, Colo., the Idaho State Normal School, the Northern Illinois State Normal School, the Minnesota State Normal School at Duluth, Minn., and the State Normal School at Oshkosh, Wis. The use of these and other anatomical models bespeaks a progressive educational policy in many training schools for teachers, widely distributed throughout the country.

The Psychological Clinic

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# ORTHOGENICS IN THE PUBLIC SCHOOLS.

## An Editorial.

The Psychological Clinic publishes this month with peculiar satisfaction reports of the work accomplished with special classes by Miss Doll in Cincinnati and Miss Devereux in Philadelphia. We wish to make plain our reasons for believing that the publication of these articles is of special inportance at this time for the satisfactory development of the study and educational treatment of backward children.

Problems connected with retardation and degeneration have already won a place in the consideration of the trained economist, sociologist, psychologist, and medical expert. Continuous scientific progress may with certainty be predicted, which will lay bare the social and physical causes of retardation and degeneration, and their preventive and curative treatment.

This journal not only desires to encourage scientific investigation, it seeks also to gain the coöperation of the general public in solving the problems which fall within its chosen province. The community must be made to respond to something more than the sensational elements of these problems. A campaign of education must acquaint the general public with the specific causes which are active in producing abnormal development in the individual and the race. The public is keenly alive to what promises a return, either in individual or social improvement. A social and philanthropic impulse, backed in many cases by strong religious enthusiasm, is in the last resort the motive power which drives to success even work of a specifically scientific character.

It is therefore the prevention and cure of mental deficiency and defect which must be made to hold the centre of attention. To gain this advantage, we proposed the word *orthogenics,* as the name of a science which concerns itself with the restoration of those who are retarded or degenerate to a condition where normal development becomes a possibility. This word we believe adequately defines the field of work which THE PSYCHOLOGICAL CLINIC has made its own, and at the same time reveals the social motive which impels the cultivation of this field of investigation.

This journal has published a number of individual histories, prepared in most instances by those who have had the equipment of trained psychologists. These we hoped would set a scientific standard for reporting work of this kind, as well as reveal what could be accomplished through expert training.

The prevention and cure of retardation and degeneration on a large scale is beyond the power of the representatives of any branch of science. It must be undertaken by society, and above all by the teacher in the school room. We find in these reports of Miss Doll and Miss Devereux the first fruits of the work of skilful teachers in the public schools. No one can read these articles without recognizing the psychological insight shown by these teachers in approaching their problem, and without being convinced that a high degree of success has rewarded their efforts. The school room is a psychological laboratory, and the successful teacher must be trained in psychological method. It would be fruitless to demand that either the community or the grade teacher shall recognize at one stroke the necessity for a change in mental attitude, which means the turning of attention from questions of pedagogical method to what clinical psychology may be able to reveal concerning the individual peculiarities of children. The grade teacher is interested in teaching reading, writing, and arithmetic. The special teacher must be interested in developing the individual child. We consider it unfortunate that grade teachers should be asked to give attention to individual cases. In the grades, attention must ever be centered upon the curriculum, pedagogical methods, and the result as shown through class promotions. There is a problem of mass instruction, and there is an entirely different problem of individual development. These two should be kept separate and distinct, and the public schools should never give up the older ideals of mass instruction. Clinical psychology and the special teacher will not supplant the more general features of the public school; they will only supplement what is already to be found in the schools, in order to make the work effective in meeting special conditons.

We see in these reports of Miss Doll and Miss Devereux a still more significant fact for the progress of clinical psychology. The special ungraded class must be the laboratory of a clinical psychologist. The teacher of the special class must have an adequate and satisfactory training in psychology, and must moreover possess originality in solving actual conditions for which she never could have been prepared beforehand, and finally she must be able to make her experience and results available for others. The solution must be worked out in the special class room as it were from the bottom up, and not from the top in the psychological laboratory of a university.

If the work, which doubtless many teachers are doing elsewhere than in Cincinnati and Philadelphia, is to have a vigorous effect in changing educational opinion and in serving as an example, the teachers who are actually doing the work must become articulate. They must be able to express in suitable language their observations of the conditions which they find, to state the methods which they have employed, and to report the modification in mental and moral character which they have succeeded in effecting. THE PSYCHOLOGICAL CLINIC believes that it has no more important service to render the community than to inspire teachers like Miss Doll and Miss Devereux to make reports such as they have prepared, and to furnish the medium through which their methods and results may be made a matter of common knowledge.

Men and women of scientific training, such as Ayres, Falkner, Smith, Heilman, and Town, have been contributing to this journal results which are making clear many phases of the problem of retardation; superintendents who have found it possible to do original work while actively engaged in their profession, like Bryan, Twitmyer, Van Sickle, Martin, the Indiana superintendents, and others, are establishing a basis of fact upon which the problem may be worked out in various communities. Scientific and administrative work is only preliminary to the real work, which must be done in the school room. In every school with an enrolment of a thousand children there should be found a special class. We believe that the problem has been worked out far enough for us to be practically certain that the special school cannot solve the peculiar problem of the backward child. It is to be solved only through a special ungraded class in close association with graded classes. The remarkable results of Miss Doll and Miss Devereux in returning to the grades children whom they had had under training for only a brief period, are convincing on this point.

If a special class is to be formed, it is necessary first of all to organize it under conditions which make success possible. The teachers who are assigned to this work must have received the proper training. Miss Devereux's success is as much a credit to the Philadelphia Normal School, where she was trained, as to her own skill and ability. The Philadelphia Normal School, under Miss Prichard and Miss Hutchin, has probably as progressive a course in psychology as can be found in any normal school in this country. An official visitor from abroad, who was examining on behalf of his government the normal schools of the United States, pronounced the course in psychology at the Philadelphia Normal School the best which he had seen. There is only one foundation for satisfactory work in this particular field, and that foundation is laid by a sound psychology.

The teachers of the special class should have had for a time at least some experience in teaching primary grades. The charge of a special class should come to them as a promotion. After due regard has been given to training and experience, these teachers should be let alone by their principals and superintendents to work out their problem as best they can in the light of their training, their experience, and their natural abilities. For many years to come, the young men and women who graduate from our better normal schools will be more competent to deal with the problem of the backward child than will those who are to be found in administrative positions of authority, whose training of necessity has been along the lines of an older psychology and a more conventional pedagogy.

If these teachers are to be promoted to special class work because they have enjoyed special psychological training, and their work in the grade has marked them out as teachers of ability, this promotion should carry with it an increase in salary. The special classes will be a failure unless the teachers of the special class receive the highest salary that is being paid to a grade teacher. The work is difficult, it requires ability and training, and the special class teacher should become the school's center for the diffusion of new knowledge gained through experimentation in the special class room.

These teachers must not be overloaded with large classes. From fifteen to twenty-five is the largest number that may safely be assigned to one teacher. The class must be equipped with material for hand work, because it is through the use of the hands that attention and moral character may be trained. All this is expensive. The *per capita* cost of the work which Miss Doll and Miss Devereux are trying to do must be from three to five times the *per capita* cost of teaching a child in the grade. There is no use trying to conceal this fact from boards of education. These are usually composed of men of business insight, and their first question is rightly enough, what is the cost, and why should this expensive venture be undertaken? Boards of education must themselves be made to go to school. The material for their instruction is to be found in such articles as that of Mr. Ayres in this number of THE PSYCHOLOGICAL CLINIC, on "The Cost of the Repeater," which shows that fifty-five cities are spending from 5 to 30 per cent of their school funds on children who are doing the same work for the second, third, or fourth time. Facts like these must in time convince even boards of education that the calculation of the *per capita* cost is only the first step in forming an estimate of the relative value of school expenditures. Falkner and Thorndike have shown that owing to elimination only a small percentage of children are getting an education in our public schools. From 25 to 50 per cent pass out of the school uneducated if we believe that an education involves graduation from the primary school. The *per capita* cost may be kept so low that we fail to attain the object for which the schools are supposed to exist.

The problem of the schools, therefore, is to educate, which means to-day to foster normal mental, moral, and physical development during the most important years of the child's life, from six years of age until early adolescence. The results which THE PSYCHOLOGICAL CLINIC is placing before the community show how large a percentage of these children fail of normal development. Nor shall we rest with a mere presentation of the facts. We must find the proper methods for restoring these children to the normal path of development.

To-day we are feeling our way, and this is not the least interesting feature of the study of orthogenics. By some minds the well trodden path is favored, to others it is pioneer work, the blazing of a new path through the forest, the climbing of an unexplored mountain, which makes the strongest appeal. Even statistics appear no longer dry and hopeless when one plods through them without knowing where he will come out, and reaches such unexpected results as have been obtained by Bryan, Cornman, Ayres, and Falkner. The pioneer work which must be done by the teachers of the special classes, presenting constantly new problems and unexpected results, must fill those engaged in the work with an enthusiasm which will surely be contagious to all whose educational interests have not become too thoroughly conventionalized.

# A CINCINNATI SPECIAL CLASS.

By Louise M. Doll.*

*Eleventh District School, Cincinnati, Ohio.*

My class was organized December 3, 1907, with a membership of twenty-four defective or retarded pupils, comprising ten from the first grade, ten from the second, two from the third, and two from the fifth. The number varied from time to time through dismissals and recruits, until altogether forty-nine pupils have received special treatment adapted to their individual needs. I desire to invite your attention to several particularly interesting and stubbornly resistant cases in which there seemed at first but little hope of progress, but which ultimately astonished and gratified me by the capability disclosed and the improvement made after their inertia began to give way.

Of the entire number of pupils whom I have treated, sixteen, after varying periods, were restored to their classes to take up the work with their normal mates; twenty were promoted to higher grades at the close of the school; ten others, who could not be so promoted, are prepared next year to perform intelligently and self-helpfully the work of the grade in which before they were floundering or helpless. Three should again receive special treatment next year. Eleven were withdrawn during the year, owing to removal from the district or because of sickness.

*Case 10.*—August S., aged sixteen, entered school last September for the first time in his life. He is a victim of infantile paralysis and his father carried him till he was eight years old. He sat in a second grade room, doing nothing all day and making no effort to exert himself except occasionally to answer a question in number work, which power, though very slight, he had gained from experience. When the boy first came under my care, he had so little control of his muscles that I expected to see him fall every time he attempted to walk. When away from home I think his self-consciousness aggravated this uncertainty of gait. His hands twitched and when he tried to use them, they would shake and jerk beyond all control. I put a pencil in his hand and asked him to attempt writing. He had never written a letter. His hand flew off the desk and he could not confine his endeavor to the area of a sheet of paper. This one act involved a threefold process. He had to concentrate his whole attention and exercise to the utmost his inhibition in manipulating the pen; furthermore he must conceive form and reproduce it under terrible stress of attempted co-ordination; also he must control the pen with some regard to the size of the paper. In his nervous state this was impossible. I sent him to the blackboard where he was not harassed by lack of space nor by the thought of wasting paper, which seemed to worry him. From the very beginning I tried to make him feel free from all the worries due to his consciousness of utter helplessness, to convince him that every effort on his part was worth any material waste. In the absence of this worry, he bent every energy toward accomplishing something, and in spite of the many twists and jerks, he produced the first day words that were legible. The boy was very often hopeless and ready to give up and it required constant encouragement and commendation to induce him to continue the struggle. He was much at the board, mastering letters, words and sounds. He would withdraw himself from the class and plug away. August's improvement was astounding to me. That week was a revelation. He read the first reader and the greater part of the second. He could spell any word he read. At first, he had his own list of simple words, which he would bring every morning, written on a typewriter at home. His father had bought him this toy machine as soon as the boy was able to recognize letters and words, with the promise of buying him a bona fide type-writer in the near future. He received every encouragement to exert himself. He worked very hard and was soon writing down words from dictation with the second grade pupils. He seldom missed a word. His arithmetic improved enormously. Consider, that in December, he could not use his hands, and in the spring he was weaving raffia mats and reed baskets as evenly and accurately as any one. Having been shown several times how to begin weaving a basket, he soon asked permission to try it all by himself. He measured and cut his materal and with only a few words of direction now and then, he produced very pretty work.

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*Report submitted June 18, 1908, to Superintendent Dyer, of Cincinnati, O., on the work of a special class for defective and backward children in the Eleventh School District, December 3, 1907, to June 18, 1908. This class was organized under the direction of the Superintendent of Schools and the immediate supervision of Dr. W. C. Washburn, principal of the Eleventh District School.—Ed.

Having been once aroused and assured of a bright outlook, the boy became ambitious even to a fault. He would so strive with mind and body to accomplish a task, that the cords in his neck would swell, his jaws would stiffen and success would often be accompanied by exhaustion, brightened nevertheless by a flash of exultant intelligence. I watched him closely and checked him by occasionally diverting his interest, and he grew stronger day by day. He also walked straighter and with more assurance; I no longer had occasion to fear his falling.

It was my pleasure to plan for his future, but his father carried him off to a farm, which he bought out of consideration for the boy's health. August has tasted of the joys of reading and the sweets of books, and were he never to enter school again, I feel it is safe to predict that he will become a book lover, with all that this means of mental enrichment.

*Case 9.*—William D., aged seven, is a pupil in the second grade in the second year of attendance. He was very slow in his work, his manner was indolent and indifferent, the "don't care" type. He was given the freedom of the streets and associated with twelve and fourteen year old boys. William had dropped slowly into a comfortable lethargy and was insolent when I attempted to arouse him. He would not read except under my close and constant vigilance; I had fairly "to pull the work" from him. I directed all my energy towards inspiring him with a love for reading and a willingness to work.

William returned to his own class on March 18th. I can say with truth that the boy was at this time a delightful pupil. I was loth to give him up. His spelling and arithmetic were very good. His power to read was a rich compensation for all the effort required to arouse this boy from stagnation to burning activity in the school. William now devours all reading matter accessible to him. He also improved in his German reading and writing. He is a very promising pupil for the third grade.

*Case 5.*—May L., aged eleven, pupil in the second grade, had been going to school six years. She had spent three years in each of the first two grades. Her teacher stated that "she could barely read, did scarcely anything, in fact, was empty and very flighty." She was weak in number and phonics, and lacked the power of concentration. May entered the class on December 3d and was returned to her regular class on January 29th. She applied herself earnestly and without any constraint whatever. She worked diligently and was very ambitious to gain approval. She was made to feel that she was accomplishing a great deal and this lent a spur to her efforts. May's improvement in reading, spelling, phonics and arithmetic was remarkable. Her German also showed improvement. She loved to read and read everything that came within her reach. Her regular teacher reported that she held her own in the class to the end of the year.

*Case 27.*—Frank S., a boy who had spent two years in each grade, and who because of his hopelessness, age and size, was given an opportunity to get what he could out of each succeeding grade, is now at the age of sixteen, in the fifth grade, while in December last, he was unable to read in a first reader. Naturally, in his inability to do the work with his class, he had contracted habits of idleness. He did not recognize words like *was, him, her, he, she,* etc. I led him back to the essentials in phonics and reading and spelling. He has now read a first and two second readers and enjoys reading. Frank has been a failure in spelling. He improved greatly and at last it was a rare occurrence when he missed a word. A remarkable thing about him was his confounding words. He would recognize the meaning, without being able to pronounce the word and would find a substitute in a synonym. He would read "listen a while" for *listen any time,* "big" for *large,* "small" for *little,* "short" for *little,* "home" for *house,* "under" for *down,* "catch" for *get,* "tall" for *high,* "untie" for *fasten,* "wide" for *broad,* "talk" for *speak,* "save" for *keep,* "arm" for *hand,* "punish" for *scold,* "trembling" for *shivering,* "hearing" for *listening,* etc. The boy spells correctly words that he has prepared. He does not read well at sight, although very much better than he did. He does not possess a natural power to spell. Known analogous words are not of much assistance to him. He learns every word as something entirely new and by spelling it. He does not conceive the relation between the letter and its corresponding sound. Frank has made remarkable progress this year.

*Case 22.*—Katie L., eight years old, had been in the first grade two years, without evidence of having learned anything. The teacher stated that "she did nothing in English, grasped nothing," that she could not tell whether Katie was inattentive or lazy. She was very irregular at school, her mother treating lightly the rules of attending school. Katie was lazy at the beginning, but she very soon found it more interesting and gratifying to be active and busy. She aroused within herself a burning ambition and was a reliable, earnest, little worker, always anxious to assist others. She had a clean record of attendance while she was in my room. She was sent back to her mates on February 3d. She took with her a good vocabulary to build upon and a very receptive and hungry state of mind to feed.

*Case 40.*—Leah B., seven years old, was spending her second year in the first grade. When she came to me on March 23d, her teacher stated that she was not sure of more than twelve words and that she was doing less in her class than the February entries. Her progress was very slow. Her nature was strikingly peculiar. I am not able to say that any one of her faculties was defective, but I think I do not err when I state that the "sum total" was deficient. Leah is a most perplexing problem. She is a perfect wild cat, and indeed the expression of the eye is like that of a cat about to spring on its prey. She is very restless, very trying in her contrariness, extremely aggressive, will pout and in her obstinacy snatch and throw things about. She has a loud, uncouth voice; likes to tantalize and torture others, is cruel by nature, delights in causing pain and never regrets it. Leah is physically strong, in stature a large girl, but of a nervous temperament. She is very destructive, works by fits and starts, has no power of concentration, is slow to comprehend and unable to retain what has been repeated many times. Leah needs taming rather than teaching. Kindness affects her not at all; she requires rigid treatment, stern and relentless. Her progress has been very slow, due to the fact that her attention, as well as that of her teacher, is directed to keeping her straight and suppressing her atavistic tendencies, which are constantly clamoring for dominance. She works well at times, but even in the midst of work loses no opportunity to stir up some trouble with her neighbors. She now writes connectedly and well. She still makes mistakes but correction is effective, which was not the case some time ago. She reads a part of Stuart and Coe. Her wildness of nature has not been entirely brought under subjugation and I fear that during the vacation, free from the surveillance of a teacher, her condition will not improve.

*Case 19.*—Isador I., who declares he is six years of age, which I doubt, entered school last September. He was a child who should have been kept at home a year or two longer. However, his home was not one in which a child could properly unfold and grow. His father is separated from his mother and while at home he beat her. The boy relates this in a matter of fact way, showing that he has been bred in just such an atmosphere. He is in a more wholesome environment at school, although his attendance is premature. Isador is a precocious little fellow, who prefers the sound of his own voice to any other pastime. He is extremely clever and shrewd in what he sets out to do but correspondingly slow and dull in doing what is prescribed for him. His youthful powers of entertaining have been encouraged to his own detriment; he is forward and must be held in check. Isador is so shrewd that he evades answering one question by asking another. He frequently turns the point of attack from himself to the person who is in authority over him, or he leads the questioner into another channel by abruptly introducing another subject. Writing seemed to be beyond his ability, though I am inclined to believe that it was not so much inability as lack of perseverance. On June 4th he wrote his first words *sit* and *me*. He was happy when he accomplished this, but it involved so great a struggle that he was apparently satisfied and had no desire to exert himself further. He learned and memorized new words readily, and now reads nicely from Stuart and Coe. He will be a strong pupil in the first grade next year.

*Case 32.*—William B., aged nine years and six months, a pupil in the second grade, has attended school three years. His home influence lent no support to good impressions made at school. He had no mother and a pleasure-loving sister of sixteen had charge of him. William acquired a taste for the street and was very irregular and tardy at school. He was also very lazy, but I think all this resulted from his being sent from school to school, his several aunts having had the care of him after the death of his mother. William put forth some effort in his English class, but was very slow. There was discord between him and his German teacher, hence he accomplished nothing in that class. He was not loth to join my class, and before long worked with great zest and seemed very happy in his work. He found much pleasure in reading. I have about twenty-five little classics that I let children have when they have finished their regular tasks. William read all these besides his regular second reader and a supplementary second reader. The little books he would ask permission to take home to read in the evenings. He showed aptitude in hand-work, and made some very pretty raffia articles. He would also take some raffia to work with in the evenings. The fact that in the evenings he remained indoors and occupied his time with reading and working in raffia, instead of running the streets till bed-time, effected a great change in this boy. He had also been drinking coffee three times a day and was now abstaining from it entirely. William had come to me January 29th and joined his own class February 27th. He had acquired wonderful power in reading. He was strengthened very much in spelling and phonics, and in arithmetic he was splendid. His German reading and writing also showed improvement. William came to be a very desirable pupil.

*Case 21.*—Tony K., six years of age, entered school last September. He came to me in December. His teacher said that he did absolutely nothing. He knew no difference between *meum* and *tuum*, and would help himself to other children's apples and pennies.

Tony's brother was with us for three months last year, and then was sent to an institution for imbeciles at Columbus. Tony's mother is a weak person, whose temperament would be more apt to encourage imbecility than correct it.

When Tony came to me, his face was at all times wreathed in a silly smile and his eyes had a roving, flighty, senseless stare, which seemed to work on my sympathies, so that I had to steel myself against it. Firmness of treatment promised to be more effective than suasion. I bade him close his lips tight and look right into my eyes. Thus I would hold his glance for a time and prevent the roving of his eyes. A week later he had already assumed a more rational facial expression. This having been accomplished, he astonished me with his readiness in learning to read and write words. His work exceeded all expectations. Tony was delighted with his own progress and was at all times eager to read and write. The charge against him of helping himself to what did not belong to him suggested the need of a certain vigilance, but I am quite sure this charge could not be lodged against him while he was in my room. I did not doubt the teacher's statement, for I knew he failed to indulge this habit in my room, not because he had already overcome his weakness or curbed his desires, or because no temptations crossed his path, but because of the fact that his mind was constantly occupied in some other way.

Tony had been absent eight days. His mother brought him back to school so that she might have an opportunity to express her own, her husband's and her boy's appreciation of the work. She told of the boy's present eagerness to attend school, when formerly he had to be driven from home, weeping. The boy was seldom without his slate at home. When the father observed his efforts in writing and reading, he was very much astonished, for only two or three weeks before he had not been able to produce a letter. The mother was exceedingly grateful and said she felt sure that if her older son had been put in the special class it would never have been necessary to send him to Columbus. Before the mother left I commmended Tony's work warmly, and sent her home grateful and happy. But to my utter amazement, when I had the boy read, I found that his mind was as vacant as it had been at the start. I made allowances for his absence, but no amount of repetition called forth the slightest recognition of any word. He also had the same silly expression about the mouth and eyes, did not seem inclined to attend to the work, and showed no interest in it. I then set about laying a second foundation a I had the first, with hopes for a longer duration. In this way his progress was somewhat retarded. But on February 3d he possessed a vocabulary of fifty words, wrote very well and was returned to his regular class. On February 15th, his mother called to plead for his return to the special class. She was disheartened, for Tony had been doing nothing since he left. She had noticed the change in him at once and he again showed a preference for staying at home. He will have to do the work over again next year, but I trust he will make a strong pupil. I sincerely believe his stay in this class was terminated prematurely; and that if he had stayed longer, he would have held the ground gained. It came to my knowledge that his brother Charles had been at home several days from Columbus. His condition was greatly improved on his arrival, but when he returned to Columbus he was very much worse. This seems to confirm my previous statement concerning the mother.

*Case 20.*—Harry K., aged seven, has been in school two years He is one of six, in a very ignorant and rather poor family. He acquired absolutely nothing in his first year at school. When he came to me it seemed that he was bordering on hopeless imbecility. His eyes shone with a light that never changed and reflected an utter blankness. His mouth was always open in a kind of senseless smile. He never talked and would answer only with a shake of the head in a combined *yes* and *no* which was altogether unintelligible. I insisted that he close his lips firmly whenever I spoke to him and whenever he looked at me. This produced the first attempt to take himself in hand, for he had to watch himself and never look at me with open mouth. The silly, foolish look soon disappeared from his countenance. It was a task to get him to say *yes;* he invariably omitted the final "s". He will do so even to-day, if one does not insist on the correct pronunciation. I felt that it was utterly hopeless to teach him to read. I wrote the one word *boy* on the board in several places, and repeated this for days till finally he recognized it in a list of words. When I saw that he was sure of this word I slowly added others, until he had a vocabularly of fifty words. He saw no similarity between the printed and written words. He had to be taught the printed words as new words, script for him being no stepping stone to print. At the close of school he was reading on the printed pages of Stuart and Coe. Writing was a matter of slower development than reading. On March 5th he showed the first glimmer of intelligence. Before this, he would write a word many times and with great speed as a mere combination of strokes. All words were uniform, showing he had a conception of form and number of strokes, but his power to imitate letters—to copy—was nil. He saw no curves; all was pointed. To break him of this habit of producing pointed letters, I let him practise following lines with his chalk without deviating in any direction. He accomplished this, but the production of a curve was still an impossibility. The German "s" and "t" seemed to me to involve less difficulty and I let him try to form them. This resulted more satisfactorily than any preceding experiment. From this there was but a slight step to "t," which he actually curved at the bottom. I was wild with joy, for I was never more discouraged in any undertaking. I feared he would make his straight lines forever. The boy was delighted in making "t's" on the board and on his slate. In writing "l" and "b" he pointed the top for a time but curved the bottom. It was not necessary to practise writing many letters before he was able to copy a word. To-day he can write anything and has a good, bold hand.

When Harry entered the class he was helpless, almost an imbecile. He was powerless to defend himself against any attack, even when made upon him by the smallest child. He would accept any amount of abuse, weep because of pain, but offer no resistance whatever. He is now self-helpful in class, likes to read and write, and is ambitious to work without aid.

The one great power which this special class has developed is that of self-abstraction. The pupils, without exception, have acquired this power in a very marked degree. Each child in the twenty could pursue his own work regardless of what might be going on about him, whether there were recitations or some attractive exercises.

The children on entering my class were generally stamped by pronounced habits of idleness; a few were perfect babies, utterly helpless and dependent. Most of them had drifted into a state of lethargy, in which they were seemingly very content. They were perfectly satisfied not to exert themselves in any way.

Each pupil has now crept out of this state of lethargy and has taken the field of activity, of eagerness "to do". Every child who was returned to his room in the course of the year, went back filled with a burning ambition to hold his own with his regular classmates. In the class the children would vie with each other to read first, they would boast of their having had so many "turns" at reading in a day, and there also arose among pupils a wholesome rivalry, which lent quite a spur to their ambition. When one considers that the children on entering were loth to read or to exert themselves along any line, the fact that they have waked up and that their desire to do things has been aroused shows the great value of the special class.

*Slovenliness* in reading, writing, and in fact, in all work, is a marked trait in these retarded and defective children. One might think that in their inability to do work requiring rational thinking, they would do well mechanical exercises, such as writing, cutting, etc. This is not the case, however. I have never known another class in which pupils would hand in such mussy and almost disgusting papers.

Their oral work was of the same nature. In reading, they would omit a word or several words, slide right over them, repeat the same thing once or twice, and when pinned down to the line and made to see the error, would correct it and continue without any apparent impression being made upon them. The final "s" and "ed" in reading might just as well have been omitted in the printing. In spelling, an *a* is an "o," an *i* is an "e," an *l* is a "b," an *r* an "s," and vice versa; they spell what seems most convenient and nearest at hand or uppermost in mind, and not the corresponding sound or letters of the characters before their eyes. They are as slovenly and loose in hearing things as in seeing them—for instance, spelling t-h-r-o-n-g-y for t-h-r-o-u-g-h, etc.

Another strong characteristic of this class is one of destructiveness. Their first impulse is to tear, crush and destroy whatever they take into their hands. Another common trait is cruelty. The children hit, stick and annoy each other for the pleasure they can get out of it. They will destroy each other's work. Some were aggressive in every respect. In spite of this, however, they are very tractable. They obey very readily, but must be frequently corrected for the same offense.

At the beginning they were also prone to be tardy and irregular in attendance. This was soon overcome.

These children show a lack of power of concentration; they need frequent change of work. This is the most difficult problem for the teacher—to supply wholesome material to the different individuals—to have sufficient resources in mind and on hand to deal out to them. The one great factor conducive to the development and growth of these children is perfect freedom. They do not thrive under undue repression. In their rational growth they need none. Not one child of my class this year is a helpless dependent. With a little direction every child can go about its own work.

# REPORT OF A YEAR'S WORK ON DEFECTIVES IN A PUBLIC SCHOOL.

By Helena T. Devereux.

*The Wharton Combined School, Philadelphia.*

On January 15, 1908, a class for exceptional children was formed in a large school in the foreign slum district of Philadelphia.* It differed from the regular special schools, which have been established in this city for some time, in that it consisted of merely one class room in a regular school and the children were selected for retarded work and not only for truancy or other incorrigible habits. All classes from the first to the eighth grades were given the privilege of placing children in the class. Only the first, second or third grades had children, however, whom it was decided were retarded enough to need special instruction. These children were reported not only as being stupid, but "queer". It is hard to define exactly what was meant by this term but it did mean that the child to whom it was applied was singled out from the other children. Other children not placed in the class were dull and slow but still normal, while each of these children seemed to have a personality differing from the normal child and also from the purely incorrigible type.

From January, 1908 to February, 1909, forty-three children have attended the class, some for one month and some for the year, some for both sessions and some for only one. Among these children thirty-four were of Russian Hebrew extraction and four of Italian . Of the twenty-six who first formed the class six were respectably cared for. The others were much neglected, and as they lacked even the pride of the ordinary child, they were, indeed, a forlorn looking little company, insufficiently fed and poorly clothed. They ranged in ages from eight to fifteen years, being from two to five years retarded as compared with the average child.

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*Organized in the Wharton Combined School, by Miss Margaret T. Maguire, supervising principal, under the direction of District Superintendent Brelsford.—Ed.

When the class was organized, attention was of course first given to the discovery and, where possible, the removal of physical defects. While none of the children were monstrosities such as some of those found in institutions, all presented some physical signs of backwardness besides the slow development of mental powers. Of the physiological defects the open mouth, abstracted stare, irregular aimless movements of the limbs, tremors of the body and a general lack of coördination were the common ones. Because of the difficulty of conversing with the foreign parents, practically no definite early history could be obtained which could throw any light on the causes of retardation. Our school physician spent considerable time in the examination of the children and besides cases of malnutrition, rickets, nervous disorders, skin diseases, found the following defects of the special senses—eye 21, ear 5, throat 15, and nose 14. The parents of these children were notified by the visiting nurse and urged to take the children to city clinics. But it is no small task to make these parents see the necessity for medical attention. Not that they mean to be unjust to their children or to deprive them of the care which is their birthright, but chiefly because they themselves are too ignorant to see whither physical degeneration tends. As has been so well said, "They are the gelatinous children of albuminoid parents." However, by the time school closed in June many cases had received attention. No medical treatment was given for anything but defective special senses. The cases of extreme neglect, often resulting from marked poverty, were visited by the nurse and advice given, and where possible, assistance was rendered. During the first months I gave daily talks on hygiene, making them interesting enough to appeal to the children and insistent enough to have some good effect. So through these various channels some few ideals of health and cleanliness were given to both parents and children and thus the foundation was laid for the pedagogical training.

Before the class was started the idea was that the manual work (woodwork, basketry, paper, sloyd and sewing) might be a means of awakening the child and might form a "peg" on which to hang the real mental training. My only idea was to immediately teach the child the rudiments of school work and so return it to the regular grade when it was sufficiently advanced. When I had been with the class for one week I abandoned my scheme of memory and sense perception, training the intellect only as a side issue, and I determined to base all my work on the development of the emotions. The great need of those children as I read it then was to make them less like little animals —to instil humanity into them. I could understand then wherein these children were queer. They were subnormal or rather freakish in disposition and temperament. They were selfwilled, passionate, malicious, and all their short comings were very glaring, largely because they had not the sense of their fellows to see when it was expedient to be "good". With each child I picked out the moral defect or defects which were most emphasized such as selfishness, untruthfulness, stubbornness and temper, and determined to overcome them. I tried to make them see in every way what was the right thing to do, and not only to make them do it but to make them want to do it. I cared less that they should learn to write their names or finish an article in woodwork beautifully than that they should learn truthfulness, obedience and promptness, and truly they learned to watch, to listen, and to do. The bearing that this phase of the work, the training of the emotions, had upon the results cannot be overestimated. It laid the foundation for the other training—the mental side. I certainly agree with the educators who say that when once the real personality of the backward child is revealed it is more childlike in its trust, kindliness and simplicity than the normal child. When once they recognized that the teacher was their friend their attitude towards school life gradually changed. When definite instruction for the purpose of advancing them in their school work was given, the children were earnest little workers who wanted to learn. Their previous training had increased their power of attention so that the teaching was comparatively easy. I found each child had some serious defect, such as the inability to do arithmetic, written language, or reading. Even now when they are returned to the grade, some still have a persistent defect but it does not mar their entire standing. The result of the year's work has been that twenty-nine of the children have been returned to grade work, most of them to the same but several to higher grades than those from which they came. They are doing by no means the best work but quite satisfactory work with the exception of six children who are doing really good work. Eight of the children have left, four during the first month before they could be helped, and later four who had been somewhat benefitted. Of the remaining six children tive have been with me for less than four months, and will I expect shortly return to the grade work. That reduces the number to one for whom the class seems to have been a total failure. She is a girl fourteen years old, of marked physical degeneration, whose home influence is too pernicious for any school discipline to overcome. Before entering the class, this girl's physical welfare had been more throughly looked after by the school doctor and nurse than of the other children.

This class has in one year been a blessing to thirty-three children, children who, though never doomed by nature to spend their lives in an institution, would surely have drifted to one, which in some cases might easily have been a prison, had not some interest been taken in them. This class was begun amid many difficulties, there being no public funds provided for the necessary materials. Then too, the work was marred by my inexperience. The success of the class, especially as far as the regeneration of the boys is concerned, has been achieved largely through the wood work which was the basis of manual, emotional and mental training, and that was made possible by the generosity of a Philadelphia merchant. May my last word be a plea for more classes in our city, properly equipped, where the three-fold motto shall be interest, persistency and encouragement to aid in making useful men and women out of "the least of God's little ones."

# THE MONEY COST OF THE REPEATER.

By Leonard P. Ayres.

*In Charge of Backward Children Investigation, Russell Sage Foundation, New York City.*

"Our Overcrowded Schools," was the headline of an article which appeared in a New York newspaper during the second week in January of this year. The article reached the desk of the writer as one of a collection of clippings on miscellaneous educational topics. The same week brought from different cities five other clippings, all somewhat similar in tone. From the Minneapolis *Tribune* of January eighth came an article whose headlines told us: "2707 *Children in Basement Classes,* 60 *Rooms Below Street Level are now Occupied, Six New* 16 *Room Buildings are Needed to Eliminate Evil.*"

A Brooklyn newspaper described the congested condition of schools in that city as "scandalous and disgraceful".

From Philadelphia came an article which in part read as follows:

> "The Philadelphia school problem is the problem of the elementary schools. Of the school children of Philadelphia, 94 per cent are in the elementary schools and 6 per cent are in the high schools. There are more than 1000 children to whom Philadelphia has given a cold, cold shoulder. They stand at our school doors and knock, but no door is opened to them. Besides this 1000 and more, there are 15,255 children who have succeeded in getting one foot inside of the school. We call them 'half-timers'. In one Philadelphia schoolroom there are 116 children under one teacher."

These newspaper articles are noteworthy because they are typical. As many more similar in tone and content, and coming from all over the country, could be secured every week in the year. These words from the press tell us of the problem, and by their practically simultaneous appearance they show us how general it is. They reflect a condition that is very common in our cities.

It is evident that there are two great causes underlying this condition, lack of room and lack of money. Where congested school conditions constitute a great problem, the overcrowding is almost always found in the lower grades. In considering the possibility of ameliorating such conditions, two lines of inquiry at once present themselves. First, if our lower grades are overcrowded, who overcrowd them? Are they filled with the children who ought to be in them, or are many seats occupied by children who ought to have passed on to the upper grades long ago? Secondly, if the lower grades are filled with repeaters, how much money is expended on them each year which rightfully ought to be expended in supplying increased school facilities and in increasing the number of pupils in the upper grades? This phase of the problem, then, resolves itself into a question of the number and cost of the retarded children who are repeating grades.

It cannot be denied that we are spending money in teaching large numbers of children the same things over again. If all the children had to reach a certain point before leaving school, this money would be saved if they could reach this point earlier; but such is not the case. Children are not required to make a certain degree of progress in the schools, but only to sit there a certain number of years. From the standpoint of the taxpayer, who has no other interest in education than that of the tax rate, it is quite immaterial whether the money raised for schools be spent in training first grade pupils or eighth grade pupils.

Overcrowding means that we are not spending enough money on our schools. Retardation means—not that we are spending too much—but that we are spending it wastefully.

Viewed, then, from this economic or financial standpoint, the question is: How great is this waste? It resolves itself into a question of the number and cost of the retarded children who are repeating grades.

How shall we determine the number of repeaters? The problem is by no means simple, but will repay careful examination. The term *retarded* is applied to the child who is below the proper grade for his age. Our schools are crowded with such children. They often constitute as much as one-third of the entire membership. Whatever the causes may be that account for this condition, they may be grouped under two general heads—either the children have started late, or they have progressed slowly. In the case of the child who has started late, little blame can be laid at the door of the schools. It is the child who progresses slowly with whom this article has to deal. When a boy or girl fails of promotion and repeats the work, the city has to pay for the term's schooling twice over.

Nor is the money waste the only serious result of repeating grades. The child who spends much more than the normal amount of time in doing the work in the lower grades finds himself at the age of fourteen, say in the fifth grade instead of the eighth. Being discouraged at the remoteness of the prospect of graduation and humiliated by being associated with companions who are younger than he, instead of continuing he drops out.

These two processes—the repeating of grades by large numbers of pupils in the lower grades, and the dropping out of retarded pupils in the upper grades—account for the great disparity in numbers invariably noted in our school systems between the first grade and the final one.

Let us take for instance the case of Columbus, Ohio. In the year 1906 the enrolment in all the day schools was as follows:

| | | |
|---|---|---|
| First Grade | 3718 | |
| Second " | 2587 | |
| Third " | 2721 | |
| Fourth " | 2751 | |
| Fifth " | 2323 | |
| Sixth " | 1911 | |
| Seventh " | 1511 | |
| Eighth " | 1219 | |
| Total | | 18,741 |

High Schools.

| | | |
|---|---|---|
| I | 916 | |
| II | 675 | |
| III | 480 | |
| IV | 328 | |
| Total for High Schools | | 2,399 |
| Normal School | | 78 |
| Grand Total | | 21,218 |

The striking feature of this table is the falling off in membership in the successive grades. The first grade contains 3718 pupils, the eighth only 1219. At first sight it would appear that the interpretation of these figures is that in Columbus for every

3800 children who enter school only 1200 get to the eighth grade. But such an interpretation would be erroneous. The fact that there are 3800 children in the first grade does not mean that 3800 children enter the schools each year. The first grade is made up of some children who entered this year, plus some who entered a year ago, plus some who entered two years ago, and so on. A similar state of affairs exists in the second and third grades. In short the first grade is made up of the number of pupils who enter during the year, plus a certain number of repeaters. The second grade is made up of the number of pupils who entered a little more than a year before, plus a certain number of repeaters, and so on. If we knew the number of pupils who enter the schools of Columbus annually we could determine the number of repeaters in each of the lower grades. Unless we can discover the number of beginners our whole inquiry is fruitless.

How then shall we ascertain the number of beginners? It is not a matter of record in the printed reports of the schools, nor can we, for reasons already indicated, infer it from the number of pupils in the grades. An extended study has led me to the belief that we must seek an answer in the figures which record the ages of the pupils in our schools.* For instance the pupils enrolled in all the day schools of Columbus during the year 1905-'06 were grouped by ages as follows:

| Age. | Number. |
|---|---|
| 6 | 1,894 |
| 7 | 2,006 |
| 8 | 2,123 |
| 9 | 2,143 |
| 10 | 2,178 |
| 11 | 2,110 |
| 12 | 2,150 |
| 13 | 2,164 |
| 14 | 1,747 |
| 15 | 1,083 |
| 16 | 703 |
| 17 | 507 |
| 18 | 264 |
| 19 and over | 146 |
| Total | 21,218 |

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*In this view I am in full accord with Dr. Falkner who expressed a similar opinion in the February number of THE PSYCHOLOGICAL CLINIC.

It needs but a glance at this table to see that the numbers credited to the ages seven to thirteen inclusive are very similar in size. The average of these numbers is 2125, and the largest variation, at the age of ten, is 53, or only 2.5 per cent. From the age of seven years, when children generally enter school, up to the age of thirteen, before which they do not leave, each age, or each generation to use the statistical designation of the persons born in a given year, is substantially equal. However much the ages of the entering pupils may vary—and we know they vary within a normal range only—it is clear that the number who enter each year cannot on the average exceed the number who become of school age each year, and must in practice very closely approximate it. In other words *the number of children beginning school each year is approximately equal to the average of the generations of the ages seven to twelve in the school membership of the system.* It is not necessary to suppose for the essential truth of this conclusion that all the children enter the public schools. Whether it be all the city's population, or only a large fraction of it which enters the public schools, it is still true for this body of pupils, that the average of the ages seven to twelve among them is the best test of the number who enter the schools annually.*

For our general rule we have taken, as in the illustration for Columbus, the age seven years as the lower limit. Some children may enter at eight or even later, but the number is so small that it may be disregarded. It is substantially true, everywhere, that all the children are in school by the age of seven.

As the upper limit we have taken the age of twelve rather than thirteen as in the Columbus illustration. Elsewhere there is so frequently a considerable difference between the ages twelve and thirteen as to suggest that quite a number leave school at the latter age, and to make it unsafe to include thirteen years in the calculation. There is no such falling off at the age of twelve. Moreover, the disappearance of thirteen year old children in the elementary schools may be due in some measure to "elimination upwards" into the high school,— a consideration of importance in those cities where we have age figures for elementary schools only.

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*In our theoretical discussion of factors affecting grade distribution we called attention to the fact that the generations seven to twelve were of different size. In the present discussion substantial equality has been predicated for purely practical reasons. Ages are not reported either in the census or in the schools with absolute exactness, and hence the measurement of small variations becomes impracticable. In the second place there is no one age distribution which is typical of all cities. The rule of equality is as fair to all as would be any other. Again, if our knowledge of age conditions in the several cities were exact enough for us to compute for each, the relation in number between the seven year olds and the twelve year olds, the difference in the case of the seven year olds would presumably be slight. We should expect the average to equal the number at the age nine and the variations either side of it would be only such as a maximum of three years could produce. It is doubtful whether in any case it would exceed 5 or 6 per cent, a variation which appears negligible in a calculation which is of necessity approximate.

We have adopted the number 2118 as representing with approximate accuracy the annual number of beginners in Columbus. Referring now to our table of grades we find that the first grade has 3718 children enrolled, and in a similar way every grade up through the fifth has an enrolment considerably larger than the annual number of beginners. Therefore, we are safe in concluding that the first five grades contain a considerable number of repeaters. Their total membership is 14,000. If there were no repeaters it would be only 10,590. The difference, or 3410, represents the number of children who are doing the work of their grades for the second time. This is 16 per cent of the total membership of the schools. Columbus expended on her school system during the year $674,650; 16 per cent of this sum is $107,944. This is what it cost Columbus during the year 1905-6 to have her lower grades crowded with children who were doing the work for the second or third time.

The more important arguments that may be brought against this line of reasoning are two. First: the repeaters are not confined to the lower grades. A few—a very few—pupils get to the seventh or eighth grade, fail of promotion and repeat the work of the grade. It is even conceivable that a pupil might get as far as the last year of the high school and take the year's work twice. There are a few repeaters in the upper grades even after the age of compulsory attendance is passed. This influence tends to make the computed cost of the repeater too low.

On the other hand lies the second of the two arguments. This is that in using the total cost of the schools as a basis from which to compute the cost of repetition we have included the expenditures for high schools, which are at a higher *per capita* rate than those for elementary schools, and this influence tends to make our computed cost of the repeaters too high. The answer to this is that when the added cost of the high school instruction is distributed among all of the pupils in all the schools it becomes a very small factor indeed.

We have then two factors influencing our results, one tending to make them too high, the other tending to make them too low.

Both of them are small and in practice they very nearly counterbalance each other.

There is another doubt as to the applicability of the system used in the case of Columbus to figures from other cities for the purpose of comparison. This is that the grade figures from different cities are gathered by different methods. In some places they are based on total enrolment, in others on average enrolment or enrolment at a given date. Can they then be made to give comparable results? The answer is that where the grade figures are based on total enrolment the age figures are also based on total enrolment, and *ceteris paribus* for the other methods. Thus the relation between the number of children in the grades and the number who would be there, were there no repeaters, is not affected and the resulting percentage which gives us the money cost of repeaters remains unchanged.

In the present state of our knowledge concerning retardation and elimination it is not pretended that our method can give more than a useful approximation to the facts. Exact measurement is out of the question. But as in other cases the only way to secure in the future more accurate information is to make the most of what we have, carefully pointing out its limitations. With more precise information as to the number of repeaters and with more uniform financial methods determining the cost of instruction we should come closer to the exact state of affairs.

Yet there is virtue in an approximate measure. It is rarely the case that in its particular application its errors all work in the same direction. Given this possibility, however, it fails in any effort to make exact comparisons when there is comparatively little difference between the results. We would not, however, extend our comparisons beyond broad general lines, and within them the method we propose can be relied upon. It is a key which gives us access to illuminating facts showing the economic importance of the problem. In the following table are shown the results obtained by applying the method to the known fact of grade membership, age groups and financial expenditures in fifty-five cities.

The validity of the method for computing the number of repeaters may be checked by means of data printed in the published reports of three cities giving the number of pupils who have been more than one year in the same grade. A pupil who spends more than one year in one grade is a repeater. The cities publishing this information are Kansas City, Mo., Springfield, Ohio, and

NUMBER AND COST OF REPEATERS IN FIFTY-FIVE CITIES.

*Arranged in order of the percentage of school funds expended for repeaters.*

| | Year. | Pupils in all schools. | Repeaters. | Cost of all schools. | Cost of repeaters. | Per cent. expended for repeaters. |
|---|---|---|---|---|---|---|
| Newport, R. I. | 1907 | 3,208 | 166 | $ 129,544 | $ 0,611 | 5.2 |
| Somerville, Mass. . . . | 1906-7 | 12,488 | 817 | 369,753 | 24,683 | 6.5 |
| Medford, Mass | 1907 | 4,515 | 302 | 119,661 | 7,897 | 6.6 |
| Waltham, Mass. . . . | 1908 | 3,391 | 276 | 104,504 | 7,106 | 6.8 |
| Fitchburg, Mass . . . | 1907 | 4,079 | 300 | 159,896 | 11,672 | 7.3 |
| Newton, Mass. . . . . . . . | 1906 | 6,319 | 516 | 249,516 | 20,210 | 8.1 |
| Haverhill, Mass . | 1908 | 5,482 | 474 | 156,517 | 13,460 | 8.6 |
| Meriden, Conn | 1907-8 | 4,241 | 380 | 166,555 | 148,233 | 8.9 |
| Boston, Mass. | 1906-7 | 90,876 | 9,241 | 4,453,054 | 449,758 | 10.1 |
| Springfield, Mass . . . . . | 1907 | 13,796 | 1,397 | 373,300 | 37,703 | 10.1 |
| St. Louis, Mo . . . . . . . . | 1906-7 | 67,743 | 7,415 | 3,318,900 | 361,760 | 10.9 |
| Aurora, Ill. . . . . . . | 1908 | 2,219 | 251 | 67,714 | 7,651 | 11.3 |
| Portland, Ore . . . . . . . | 1906-7 | 16,937 | 1,947 | 668,077 | 76,160 | 11.4 |
| Dayton, Ohio, . . . . . . . | 1906-7 | 11,998 | 1,404 | 478,398 | 55,972 | 11.7 |
| Portland, Me. . . . . . . . . | 1906-7 | 9,047 | 1,103 | 250,853 | 30,353 | 12.1 |
| Utica, N. Y. . . . | 1906-7 | 9,733 | 1,194 | 249,110 | 30,391 | 12.2 |
| Louisville, Ky . . . . . . . . | 1904-5 | 24,887 | 3,097 | 658,891 | 81,702 | 12.4 |
| Malden, Mass. . . . . . . | 1908 | 6,698 | 831 | 190,953 | 23,678 | 12.4 |
| New York, N. Y . . . . . . | 1907 | 561,560 | 70,871 | 38,889,139 | 4,901,290 | 12.6 |
| Williamsport, Pa . . . . . | 1908 | 5,226 | 699 | 105,719 | 14,060 | 13.3 |
| Grand Rapids, Mich. | 1906-7 | 15,629 | 2,078 | 487,174 | 65,281 | 13.4 |
| Omaha, Neb . . . . . . . . | 1906-7 | 18,316 | 2,481 | 721,253 | 97,369 | 13.5 |
| Newark, N. J . . . . . . . | 1908 | 3,293 | 461 | 104,605 | 14,540 | 13.9 |
| Wilmington, Del. . . . . | 1905-6 | 9,311 | 1,354 | 254,656 | 36,925 | 14.5 |
| Lowell, Mass . . . . . . . . . | 1908 | 10,568 | 1,563 | 384,296 | 56,491 | 14.7 |
| Springfield, Ohio . . . . | 1907 | 6,537 | 971 | 155,393 | 22,998 | 14.8 |
| Fort Wayne, Ind . . . . . | 1906-7 | 6,234 | 932 | 234,163 | 34,890 | 14.9 |
| Denver, Col . . . . . . . . . | 1906-7 | 35,013 | 5,498 | 1,279,846 | 200,935 | 15.7 |
| York, Pa . . . . . . . . . . . | 1907-8 | 6,596 | 1,050 | 129,600 | 20,606 | 15.9 |
| Richmond, Va . . . . . . | 1907 | 14,257 | 2,293 | 240,347 | 38,455 | 16.0 |
| New Haven, Conn. . . | 1908 | 20,641 | 3,349 | 538,466 | 87,231 | 16.2 |
| New Brunswick, N. . . | 1907-8 | 2,834 | 468 | 67,027 | 11,059 | 16.5 |
| Paterson, N. J . . . . . . . | 1907 | 19,053 | 3,164 | 498,758 | 82,793 | 16.6 |
| Reading, Pa . . . . . . . . . | 1907 | 11,896 | 1,991 | 389,471 | 65,041 | 16.7 |
| Decatur, Ill . . . . . . . . . . | 1908 | 4,569 | 778 | 161,296 | 27,420 | 17.0 |
| Columbus, Ohio . . . . . | 1906-7 | 21,706 | 3,748 | 674,662 | 116,041 | 17.2 |
| Hoboken, N. J . . . . . . . | 1906-7 | 10,316 | 1,872 | 276,392 | 50,026 | 18.1 |
| Quincy, Mass. . . . . . . | 1908 | 6,222 | 1,127 | 136,150 | 24,643 | 18.1 |
| Chicago, Ill . . . . . | 1906 | 244,438 | 45,014 | 11,517,870 | 2,119,287 | 18.4 |
| Kingston, N. Y. . . . . . . | 1908 | 3,779 | 703 | 123,490 | 22,969 | 18.6 |
| Cincinnati, Ohio . . . . . | 1907 | 40,286 | 7,551 | 1,934,190 | 361,693 | 18.7 |
| Minneapolis, Minn . . . | 1907 | 44,683 | 8,465 | 1,368,504 | 258,647 | 18.9 |
| Cleveland, Ohio . . . . | 1905-6 | 69,512 | 13,232 | 2,630,077 | 499,714 | 19.0 |
| Kansas City, Mo. . . . . | 1906-7 | 32,673 | 6,326 | 1,814,652 | 350,227 | 19.3 |
| Philadelphia, Pa. . . . . | 1907-8 | 157,317 | 32,693 | 4,330,661 | 896,446 | 20.7 |
| Jersey City, N. J . . . . . | 1906 | 29,902 | 6,411 | 1,184,143 | 253,406 | 21.4 |
| Wheeling, W. Va . . . | 1906-7 | 5,745 | 1,342 | 133,313 | 31,061 | 23.3 |
| Newark, N. J . . . . . . . | 1906-7 | 51,499 | 12,118 | 2,128,484 | 500,193 | 23.5 |
| Passaic, N. J. . . . . . . . | 1907-8 | 7,164 | 1,688 | 198,467 | 46,639 | 23.5 |
| Erie, Pa . . . . . . . . . . . . | 1906-7 | 7,974 | 1,970 | 206,499 | 51,005 | 24.7 |
| Baltimore, Md. . . . . . . | 1906-7 | 68,721 | 17,391 | 1,773,544 | 448,706 | 25.3 |
| Woonsocket, R. I. . . . | 1908 | 3,364 | 980 | 93,528 | 27,216 | 29.1 |
| New Orleans, La . . . | 1907-8 | 25,229 | 10,488 | 760,794 | 225,965 | 29.7 |
| Memphis, Tenn . . . . . | 1908 | 13,903 | 4,186 | 476,924 | 143,554 | 29.7 |
| Camden, N. J. . . . . . . . | 1906-7 | 13,648 | 4,147 | 397,968 | 120,584 | 30.1 |
| TOTALS . . . . . . . . . . | . . . . . | 1,906,836 | 312,457 | $88,966,717 | $13,719.381 | |

Williamsport, Pa. The substantial agreement between the computed results and the printed facts is shown by the following table:

| | Per cent repeating (printed report) | Per cent repeating (computed) |
|---|---|---|
| Kansas City | 19.8 | 19.3 |
| Springfield | 15.3 | 14.8 |
| Williamsport | 13.1 | 13.3 |

It is evident that my method of computation gives results very close to the truth.

The condition revealed above cannot be lightly passed over or safely disregarded. In the schools of these cities are more than 1,900,000 children. Of this number more than 300,000 are repeaters. The annual cost of conducting those children for the second or third or fourth time over the ground they have already traversed, reaches the astounding sum of nearly fourteen million dollars. If the school systems of these cities are fairly representative of American city school systems, then we are spending each year about twenty-six millions of dollars in the wasteful process of repetition.

In a broad general way we have answered the question what is the money cost of the repeater, and on broad general lines we do not hesitate to describe it as waste. Elimination of waste, means either a decrease of effort or an increase of effectiveness in the effort made. We are disposed to believe that in the present case the latter would be the main, perhaps the exclusive result. But it is one which is well worth striving for. These economic considerations add an additional motive to those who are seeking light not only upon the extent of retardation, but on its causes and possible remedies.

Some of the expenditure for repeaters is unavoidable, but not all of it, for we cannot be sure that repetition is wholly ineffective from an educational viewpoint. But we feel sure that more is lost than gained by the process of repeating.

The effect of retardation is not to make school expenditures greater, but to make their effectiveness painfully less. To reduce retardation would greatly enhance educational efficiency rather than effect a financial saving.

# NEWS AND COMMENT.

## *The Elimination of Pupils from Schools.*

*To the Editor of* THE PSYCHOLOGICAL CLINIC:

DEAR SIR: Two recent articles in this journal discussing the elimination of pupils from school (*Some Factors Affecting Grade Distribution*, by L. P. Ayres, and *Elimination of Pupils from School,* by Dr. R. P. Falkner, in Nos. 5 and 9 respectively of Vol. II) should perhaps receive a word of comment from me. They call attention to certain factors which have to be considered in any estimate of the amount of elimination that is made from school age-populations and school grade-populations. All these factors, with the exception of the influence of the method of computing enrolment upon the amount of elimination, were considered by me in my own estimation of elimination, reported in Bulletin No. 4, for 1907, of the U. S. Bureau of Education. And it is my opinion that if Dr. Falkner or Mr. Ayres will estimate the elimination in cities of over 25,000 for the year 1900, they will find themselves assigning very closely the same amounts of influence to all these factors that I assigned and getting an estimate not more than 8 per cent lower than mine, perhaps no lower, perhaps 6 or 8 per cent higher.

I published the original data so that anyone could make such an independent estimate and sincerely hope Dr. Falkner or Mr. Ayres will do so. Until this is done, it is probably unwise to argue *pro* and *con,* as to whether I allowed too little for the greater length of the earlier grades or as to whether they are likely to allow too much therefor.

There is however one matter where careless use of language on my part has led to misapprehension which it is my duty to correct. Having corrected the school grade-population data for elimination by death, and for the growth of population of school age, and for the country-city migration as best I could without imposing on any school officers, I had to make the correction for the inequality of the grades in length. I corrected for this by using the figures which in my opinion bore the same ratio to the number of children entering school in one year that the enrolment in the grades from the fourth on bore to the number entering these grades in one year. Such a figure, I find, I carelessly called (on p.46) "the number of pupils beginning school annually." I was not aware of this carelessness on my part until I sought for an explanation of Dr. Falkner's apparent injustice to me on pages 265-269 of his article. I confess that in spite of my careless phrase, it seems to me that what I *did* was entirely clear. For if I really had thought that, for instance, the number of pupils beginning school in Baltimore in a year was over 11,000, I should, of course, have made a second correction in the opposite direction for the fact that pupils stay on the average more than a year in the later grades. That what I did was substantially correct will be seen by applying the check test which I devised and used for my general estimate, to the case of Baltimore. This test is that the estimates of elimination, 'retardation,' growth, etc., must be such as will fit the observed age-distribution to the observed grade-distribution with the least improbability.

By anyone who does this in any reasonoble way, it will be at once seen that if there is a retardation in the grades from the fourth to the eighth of even one-quarter as much per grade as exists in the first grade, my estimates for elimination are in no wise contradicted by the data of school age-populations. So also in Denver. So much for the possible constant error of underestimation of the relatively greater retardation of early as compared with later grades.

Another matter concerns the variable errors, that is the lack of precision in the approximations from single cities for which my estimates for the cities in general were made. I am grateful for the correction in the case of Cambridge, Mass. The correction in the case of Malden is obviously unfair, unless the condition of the schools of that city has not changed from 1900 to 1908. To use data from 1908 to estimate elimination in 1900 is hardly scientific. I must confess to the conviction that my report itself gave better measures of these variations in approximation than Dr. Falkner gives. Such variations, as is well known, do not prejudice the general result in any way not fully and clearly stated in the original report. The result from twice as fine approximations but from only six cities would not be sounder, and the result from twice as coarse approximations but from four times as many cities would be equally sound.

Lastly I may refer to the criticism that I ascribed some special value to the figure $\frac{\text{I} + \text{II} + \text{III}^*}{3}$.

The fact is that there must be some base or other to correct from, $\frac{\text{I}+\text{II}+\text{III}+\text{IV}}{4}$, or $\frac{\text{I}+\text{II}+\text{III}}{3}$, or $\frac{\text{I}+\text{II}}{2}$, or I, or II, or III, or IV, or the number of entering pupils, or the maximum age-registration, or something. Whatever it is, either it or the figures divided by it, or both, will be subject to various corrections. Any one base is right *if it is rightly corrected.* I took the particular base I did rather than one including the fourth grade enrollment because in certain cities the fourth grade enrollment is influenced by the factor of elimination itself. I took it rather than $\frac{\text{I} + \text{II}}{2}$ because it utilized the information at hand more fairly. I did not take the maximum age-registration as a base for various reasons, chiefly for the obvious reason that the age-registrations were not published for most of the cities in question. The number of pupils beginning school also was rarely reported in usable form.

EDWARD L. THORNDIKE.

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*In this and the rest of the paragraph I equals the enrolment of the first grade, II the enrolment of the second grade, and III the enrolment of the third grade.

### *The First Professorship of Psychology. A Correction.*

In THE PSYCHOLOGICAL CLINIC, Vol. II, page 215, it is stated that "the first chair restrictedly designated as a professorship of psychology was established at the University of Pennsylvania in the year 1888." This should have been given as 1889. The error was discovered and corrected in the reprint of the editorial on "Mental Healing and the Emmanuel Movement," in which the statement had been made. The appointment of Dr. J. McKeen Cattell as professor of psychology was of date January 1, 1889. His connection with the University of Pennsylvania antedated this, as he had been appointed lecturer on psycho-physics as early as November 2, 1886.

This question may seem somewhat technical and academic. The first recognition of modern experimental psychology was given by Johns Hopkins University, through the appointment of Dr. G. Stanley Hall as lecturer in psychology in 1882, and his appointment as professor of psychology and pedagogics in 1884. In 1884-85 Professor Ladd, as professor of mental and moral philosophy, announced at Yale a course entitled physiological psychology. Moreover, in the catalogue of the University of Wisconsin for 1888-89, Dr. Joseph Jastrow appears as professor of experimental and comparative psychology.

### *The School Nurse as a Social Worker.*

Miss Anna L. Stanley, head school nurse in Philadelphia, reports among results obtained through home visits for the year 1908: 748 children with defective vision were fitted with glasses; 87 operations upon the nose and throat were performed; 32 poorly nourished children were sent to seashore and country; 81 cases of decayed teeth were treated; 14 destitute families were reported to relief societies; and one case of tuberculosis of the lungs was sent to the sanitarium at White Haven.

The schools in which nurses are stationed at present are in the congested sections of the city, and the field is one calling for this reaching out of the schools to induce the home to coöperate with the school in putting the children in fit condition to do effective work. Even in the better sections of the city the nurse is needed to follow up the recommendations of the school physician. Without this follow-up or social work, school nursing will be relatively ineffective. It is the nurse or other social worker who must make the parents realize the necessity of caring for the physical welfare of their children. This means an endless amount of tact, perseverance and patience. The same home must be visited again and again on the same errand, until persuasion has become successful in accomplishing the nurse's aim.

If trained nurses were in every school, it would not only be a guarantee of more efficient educational and medical treatment, but would bring much useful knowledge concerning mental and physical hygiene into the homes. The schools must be the centers for the diffusion of this knowledge throughout the country.

The Psychological Clinic

Vol. III. No. 3. May 15, 1909.

# MEDICAL INSPECTION IN THE SAINT PAUL SCHOOLS.*

By S. L. Heeter,

*Superintendent of Schools, Saint Paul, Minn.*

In compliance with instructions received from the Board of School Inspectors, more than two years ago, I have made careful study of the subject of medical inspection in schools as established and maintained in other cities. I find in this connection one of the most extensive and significant movements in school administration of recent years. More than four hundred towns and cities in the United States report one form or another of medical inspection in their schools. Several states have passed laws requiring it and legislation is pending in several other states.

More than a year ago, I solicited the assistance of Mr. C. J. Herrmann, physical director in the schools of this city, in the consideration of the following topic: To what extent are school authorities called upon to investigate and meet the physical needs of school children? The report of Mr. Herrmann's investigations is given on pages 103-106 of the recent Manual and Biennial Report.

I submit herewith a series of paragraphs showing the nature of medical inspection in other schools and a brief statement of the findings of such inspection.

A physical examination recently conducted in the New York city schools shows that not less than 30 per cent of all the pupils in the elementary schools are suffering from ocular defects alone, demanding correction, and not less than 17 per cent have ocular defects so severe as to be a serious menace to their progress in the schools.

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*Report submitted to the Board of School Inspectors of Saint Paul, Minn., March 31, 1909. The report has since been adopted and the department of medical inspection will be established in September.

Dr. Cronin, chief medical inspector, New York City, in a paper read before the School Hygiene Association of America, says that all children reported as backward by various teachers were examined and out of these 95 per cent were found to have physical defects.

B. F. Dyer, superintendent of schools of Cincinnati, states that 20 per cent of the school children of that city are behind their proper grade in the schools because of defective eyesight, hearing, and other ailments.

Dr. Risley examined the eyes of 2422 school children of Philadelphia and found that 44.7 per cent had some deficiency of vision.

Dr. Sexton examined 570 school children of New York City and found that 13.3 per cent had deficient hearing in one or both ears. Of these, only one was known by the teacher to be defective, and only ten knew themselves to be deficient in this sense.

Examinations of 40,000 school children by school physicians in the duchy of Saxe-Meiningen, Germany, in 1900, showed that 23 per cent were myopic, 10 per cent or more had spinal curvature and 60 per cent had teeth which needed attention.

In a medical examination conducted last year in the Franklin School, Minneapolis, the following results were found: Malnutrition, 115; enlarged cervical glands, 170; St. Vitus dance, 1; cardiac diseases, 9; pulmonary diseases, 5; defective spine 4; defective palate, 1; enlarged tonsils, 112; post nasal growths, 46; pediculosis, 18; trachoma, 2; conjunctivitis, 2; blepharitis, 14; scabies, 2; acute coryza, 8; bronchitis, 15; enlarged thyroid, 2; epilepsy, 1.

By school inspection it is discovered that of more than 400,000 children examined in the schools of Massachusetts, 81,000 are defective in vision and 22,000 in hearing; it is stated on reliable authority that 90 per cent of the school children of Germany have defective teeth and examination shows the same proportion in American towns and cities; 137 cases of excessive adenoid growths are reported for a single city; whole schools have been found infected with head-lice.

While no medical examination of school children has ever been undertaken in this city it is probably safe to assume that the percentage of physically defective pupils is not much, if any, smaller than that found in the above mentioned cities. I recently sent to all the schools, carefully prepared tables calling for tabulated reports from principals on the ages and grades of pupils in the various schools. These reports indicate that 12,672 children in the Saint Paul grade schools or 56 per cent of the average enrolment are one year or more behind their grades. Of these 6328 are one year behind; 3650 two years; 1689 three years; 651 four years; 221 five years; and 133 six years or more behind their grades. To my mind here is a serious situation inviting the earnest consideration and investigation of the school authorities of this city. There are evidently many causes for this phenomenal retardation, such as late entrance, foreign birth, ignorance of the English language, irregular attendance, failures in promotion, congested courses of study, over-emphasis of intellectual subjects, etc., and yet it seems likely that one of the largest factors entering into this backwardness of our children is physiological, and that more attention given in our schools to the bodily conditions of children will throw new light on our educational problems, and even on the subject of backward children, and of deliquency itself.

It appears that the schools have been too exclusively concerned about the minds of children and too little concerned about their bodies. Much time and energy and money have been wasted in trying to make all children equal in mental power, without regard to physical inequalities, until now waste products are clogging our educational machinery.

Physical degeneracy too frequently leads to mental and even moral degeneracy and the school of the future must be more concerned about its under-fed and pale-faced dullards; its oxygen-starved mouth-breathers, and its flat-chested anaemics, and so far as possible aim to increase the working efficiency of pupils by the discovery and the correction of the fundamental physical defects which bear directly upon their work in the schools.

I am convinced, therefore, in the light of such considerations, that the physical examination and inspection of children in the elementary schools is a matter of vital importance not only to the individual child and the home but to the school system itself, and that the Board of School Inspectors of Saint Paul can do more in building up a rational, economic, and efficient system of education, having for its basis the physical well-being of the individual child.

It is just here that the schools need the expert advice and counsel, and the periodical visits of a school physician, who is employed to spend this time in the schools.

In reaching this conclusion, and in making the recommendations that follow, I am not unmindful of the effective work that has been done for a number of years, and is still being done in the schools by the Department of Health. But medical inspection in the schools should contemplate far more than the discovery and control of infections and contagious diseases. Oversight of such diseases should remain fundamentally the duty of the board of health, and all matters relating to the means of detecting communicable diseases, and the means of combating their spread should continue to be regulated according to the rules and laws established by that body.

Medical inspection should be established and maintained by the board of education, however, for the purpose of bringing to the knowledge of teachers and parents the physical defects of individual children which stand in the way of health, and defeat the mental progress.

Medical inspection should be considered in the light of an educational problem, rather than a medical problem pure and simple. It should involve the following of the child from grade to grade, the constant attention of the teacher to all of the school work and the conduct of the child.

Medical inspection should be dealt with not by physicians only. Its work should be under the control of the board of education and immediately under the direction of the superintendent of schools. The medical inspector should appreciate the relation of his work to the work of the teacher. He should, in fact, be as much of an educator as a physician. He should consider himself a part of the school corps, not merely to discover and report physical ailments, which affect the health of children; but to increase the physical and mental capacity of pupils, to add to the happiness of their lives, to render instruction more effective, and to increase the efficiency of the school system.

I therefore recommend that a department of medical inspection be created and maintained in Saint Paul under the rules and regulations herewith submitted.

1. A medical inspector of the schools shall be appointed each year at the annual meeting of the board in June. He shall be elected to serve for the school year only and his salary shall be fixed in accordance with the high-school teachers' schedule. No one shall be deemed eligible to this appointment except he be a graduate of a recognized medical college and hold a license from the State Board of Medical Examiners of the state of Minnesota.

2. The medical inspector of schools shall give his entire time to the work of this department from 8:30 a. m. to 12 m. on school days. He shall not engage in any other practice during the above stated hours.

3. At the beginning of each school week, he shall transmit to the superintendent of schools a program of visits to be made by him during the week, and shall do his work under the direction of the superintendent of schools and in compliance with the rules and regulations of the Board of School Inspectors.

4. He shall keep office hours at the offices of the Board of School Inspectors on not less than three school days of each week, from 4 to 5:30 p. m., for free consultation with principals, teachers and parents.

5. The medical inspector shall have charge of the examination and inspection of children, aiming essentially to report to the teachers and parents physical conditions on the part of children which affect their health, and retard mental or moral progress. He shall coöperate with the Health Department of the city in the discovery of communicable diseases in their incipiency, and in bringing about prompt isolation of pupils suffering from contagious infectious diseases, and in securing the prompt return of such pupils upon recovery.

6. Within the first semester of each school year he shall make a thorough physical examination of all pupils in the elementary schools reported to him by the teachers and principals and such others as he may suspect of having physical ailments. Within the second semester he shall make a second examination of all pupils found physically defective in the first, and such as may be recommended for special examination by the teachers and principals.

7. Card records shall be made by the medical inspector of all children affected with physical ailments or diseases needing treatment, and duplicate records shall be made and forwarded as a report to parents carrying such recommendations as the medical inspector deems to the interest of the child.

8. The medical inspector shall not be permitted to give any treatment to children except temporary assistance or in cases of emergency, nor shall he recommend to parents, except upon request, any physician, dentist, oculist, or specialist for treatment of any case.

9. The medical inspector shall be assisted in his work by a school nurse who shall be employed to give her entire time during the school year to the schools and whose salary shall be fixed in accordance with the grade teachers' schedule. It shall be the duty of the school nurse to accompany the medical inspector of schools and assist in the physical examination of the pupils, to assist the inspector in recording health defects and in reporting to parents, to follow up cases reported to the homes; to visit such homes as may be deemed necessary in the judgment of the medical inspector.

10. The medical inspector shall also send notice to the parents or guardians of pupils lacking in cleanliness. or needing treatment; he shall be authorized to exclude from school any pupil for physical defects and diseases until such time as, in his judgment, the pupil can

be safely reinstated. He shall see that principals and teachers do not permit the return to school of pupils from quarantine without the proper certificate from the Department of Health.

11. He shall meet the principals, as well as the teachers of each grade at least once each semester and give such instruction to principals and teachers as will make them familiar with the more conspicuous symptoms of physical and mental deficiency, to the end that they may suggest only those who are really atypical to the inspector for examination. He shall give instruction to teachers respecting vision and hearing tests, and on such matters relating to the physical inspection of children as will promise the assistance and coöperation of teachers and principals in the work of his department.

12. The medical inspector shall make recommendations, when requested by the superintendent of buildings or by the board, on matters respecting the physical environment of school children, such as the building lot, the drainage, heating, plumbing, ventilating, water supply, drinking facilities, sweeping, scrubbing, use of disinfectants, deodorizing, fumigating, etc.

13. He shall report regularly to the superintendent of buildings the necessity of change in the seating in any building or room to meet the physical needs of a class or of individual pupils.

# A PLEA FOR THE SYSTEMATIC ANNUAL AND UNIVERSAL EXAMINATION OF SCHOOL CHILDREN'S EYES AND EARS.

By Frank Allport, M.D.

*Professor of Clinical Ophthalmology and Otology, Northwestern Medical School, Chicago, Ill.*

The vast amount of money invested in school properties and annual budgets, cannot be well expended unless the children are in a proper physical condition to receive instruction. Unless children receive and absorb the instruction presented they cannot be properly educated. Unless children are properly educated they do not become useful citizens; instead they are apt to develop idle and criminal tendencies and become financial and moral charges upon the State. If, therefore, it is deemed advisable to materially mitigate idleness and crime, and to increase the ranks of self-respecting and self-supporting men and women, then the logical conclusion is, educate them; and if physical defects hamper their educational progress, then eliminate, as far as possible, such physical defects, and allow the children at least the physical possibility of profiting by what the public schools offer.

There is much to be said concerning the specific and intimate connection existing between a child's general health and his school progress, but as my portion of this symposium refers only to the eyes and ears of school children, I shall be compelled to limit myself to this phase of the subject. It should be remembered, however, that this topic is by no means restricted in its character, for, with the exception of mental capacity, nothing is so essential to the acquirement of an education as good sight and hearing. A child who cannot see well at a distance is debarred from participation in the important blackboard and other distant demonstrations which play an essential rôle in modern educational methods; a child who cannot study without headache or fatigue soon forms a great distaste for books and acquires habits of idleness, with all its entailed consequences, while a child whose vision is generally impaired by cataracts, corneal scars, intra-ocular diseases, etc., becomes an almost hopeless proposition so far as education is concerned. The difficulties which a deaf child experiences in the effort to acquire an education must be apparent to everyone, while a child with discharging and foul ears is not only in danger of death, but is an infective menace to the entire school.

Is it asking too much of educators and lawmakers to see that the physical condition of children is such as to put no obstacle in the way of their receiving an education in our public schools? Our public schools are a public trust, a trust given by the people to certain officers into whose hands is confided the welfare of our schools and their pupils. These officers voluntarily assume their duties; they undertake to manage the schools in the best interests of the children,the community and the nation. They require attendance and establish meeting places where they stand *in loco parentis* and where the children pass the major portion of their waking hours. They should not be satisfied then with the mere presenting of knowledge to the young and unformed mind, but should accompany it with all the solicitude and care extended to fortunate children by loving and watchful parents, for it must be remembered that many children in our public schools are fatherless or motherless or, Heaven knows, might better be, and that they will receive behind the portals of our public schools all the love and kindness they are likely to know. I do not wish to be understood as criticizing our schools or accusing their officers of neglect or carelessness, for such, believe me, is not the case. Enormous strides have been made along these and all other lines during the last few years, but much remains to be done and it is to be hoped and believed that the same degree of energy and enthusiasm which has already inspired the accomplishment of so much good work in the past, will be the means of accomplishing an even greater work in the future.

The systematic physical examination of pupils by medical school inspectors and the efficient coöperation of school nurses is one of the biggest steps that has ever been taken in the direction of improving the physical condition of school children and the results show enormous benefit. These results can be greatly increased by delegating to the school teachers themselves the practical examination of the eyes, ears, noses and throats of the children. Fortunately, this is a field which can be efficiently covered by the teacher, for, after the examination, although the teacher cannot and should not make a diagnosis, sufficient data will have been obtained to enable her to know that the child has passed either a satisfactory examination, or has some defect which may be diagnosed and treated by the physician to whom the case is ultimately referred. This examination consists in ascertaining a few simple facts as follows:

1. Does the pupil habitually suffer from inflamed lids or eyes?

2. Does the pupil fail to read a majority of the letters in the number XX line of Snellen's test types with either eye?

3. Do the eyes and head habitually grow heavy and painful after study?

4. Does the pupil appear to be "cross-eyed"?

5. Does the pupil complain of earache in either ear?

6. Does pus or a foul odor proceed from either ear?

7. Does the pupil fail to hear with either ear an ordinary voice at 20 feet, in a quiet room?

8. Is the pupil frequently subject to "colds in the head" and discharges from the nose and throat?

9. Is the pupil an habitual "mouth-breather"?

If an affirmative answer is found to any of these questions the pupil should be given a printed card of warning to be handed to the parent, which should read as follows:

### CARD OF WARNING TO PARENTS.

> After due consideration it is believed that your child has some eye, ear, nose or throat disease for which your family physician or some specialist should be at once consulted. It is earnestly requested that this matter be not neglected.
>
> Respectfully, . . . . . . . . . . . . . . . . . . .

It will be observed that these cards are not obligatory in their character and that they leave the choice of a physician with the parent. If the matter is not attended to, the teacher or the school nurse should take the matter in hand and endeavor to win compliance with the plan. The examinations should be made early in the school year, say in September, in order to bring the plan to completion and observe results before the end of the school year. It is recommended that each teacher examine the pupils in her own room, not only because she is familiar with the children and their complaints, but because it subdivides the work, so that it does not become a strain upon any one person. The reports can be handed to the principal, who should retain them for future reference. Inasmuch as a school room rarely contains more than forty pupils, and each examination can be easily made in five minutes, a whole class may be examined in a few hours. In this way the school children of an entire city, no matter how large, can easily be tested in less than a day's time, and the benefits which must follow are sure to be large. The expense is slight, as the only supplies necessary are the Snellen's test-types with teachers' instructions attached, together with the warning cards to parents and very simple record blanks. A city like Chicago, for instance, can be annually tested at an expense which should not exceed five hundred dollars per annum, a truly insignificant amount, when one considers the great benefit which must inevitably follow. Teachers need not feel incapable of making these tests, for the questions are simple, and yet when analyzed will be found to be so comprehensive in character as to detect at least 90 per cent of serious eye, ear, nose or throat defects.

This plan, which I proposed some years ago, is now in quite general use throughout the United States, and has been endorsed by the American Medical Association, most of the state medical societies, many boards of health and education, and has been made obligatory by law in Vermont, Connecticut and Massachusetts. I give the provisions of the Vermont law, the best which has yet been paseed.

"SECTION 1. The state board of health and the superintendent of education shall prepare or cause to be prepared suitable test cards, blanks, record books, and other needful appliances to be used in testing the sight and hearing of pupils in public schools, and necessary instructions for their use; and the superintendent of education shall furnish the same free of expense to every school in the state. The superintendent, principal, or teacher in every school during the month of September in each year shall test the sight and hearing of all pupils under his charge, and keep a record of such examinations according to the instructions furnished, and shall notify in writing the parent or guardian of every pupil who shall be found to have any defect of vision or hearing, or diseases of eyes or ears, with a brief statement of such defect or disease, and shall make a written report of all such examinations to the superintendent of education as he may require.

"SECTION 2. The state auditor is hereby directed to draw his order on the state treasurer for such sums and at such times as the superintendent of education, with the approval of the state board of health, may require to carry out the provisions of this act. The total expense under this act shall not exceed six hundred ($600.00) dollars in any biennial term ending June 30.

"SECTION 3. This act shall take effect July 1, 1905."

# THE EFFECT OF PHYSICAL DEFECTS ON SCHOOL PROGRESS.

By Leonard P. Ayres,

*In charge of Backward Children Investigation, Russell Sage Foundation, New York City.*

One of the studies which has been conducted by the Backward Children Investigation of the Russell Sage Foundation in New York City is a careful investigation of the school records of 20,000 children in fifteen schools of Manhattan. Among these there were nearly 8000 children who had been examined by school physicians. When the records of their physical examinations were tabulated, the astonishing condition was brought to light that nearly 80 per cent of the children who were of normal age for their grades were found to have physical defects, while only about 75 per cent of the retarded children were defective. This feature was a surprise to the investigators.

Another noteworthy point was that the percentage of defective children in the lower grades was decidedly greater than in the upper grades. The discovery of these unlooked for results led to further study of the figures. The data were retabulated by ages, and the results showed a very marked and consistent falling off of children having each sort of defect from the age of six up to the age of fifteen. Defective vision alone increases slowly but steadily with advancing age.

Moreover, these decreases were not due to the falling out or leaving school of children suffering from defects. This might be put forward as an explanation if we had to do with children above the age of compulsory attendance, or if the characteristic decrease did not take place until the age of fourteen or fifteen; but such is not the case. The children were of from six to fifteen years of age, and the marked decrease began with the eight, nine, and ten year old children and continued steadily.

Were further data not available, it would certainly be difficult to explain the seeming anomaly that retarded children have fewer defects than do children of normal age; but the data showing the decrease of physical defects with increasing age are illuminating. It is evident that here age is the important factor. The importance of this on all investigations into the influence of physical defects on school progress is at once evident.

Whether the term "retarded" is used to express a condition or an explanation, it will always follow from the definition itself that retarded children will be older than their fellow pupils in the same grades. In all cases it will always be true that the "backward" pupils will be the older pupils. Now, the older pupils are found to have fewer defects. This is true whether they are behind their grades or well up in their studies. Therefore, it is not surprising that we find that 80 per cent of all children of normal age have physical defects more or less serious, while 75 per cent of the retarded children are found to be defective. This does not mean that pupils with more physical defects are brighter mentally. It simply means that those who are above normal age are older, and that older pupils have fewer defects.

In order to ascertain what correlation may exist between physical defects and school progress, the records of the children have recently been retabulated, using as a basis age instead of grade, so that the results should not be vitiated by the heterogeneous age composition of the grades.

It is well known that in our schools there is no exact correspondence between grades and ages. Children of twelve years of age, for instance, are found in all the grades from the first to the eighth. A child of twelve in the eighth grade is unusually bright, one of the same age in the first grade is unusually dull. It is then of interest to us to discover whether the twelve year old child in the first grade will have more or fewer defects than the one in the eighth. In order to study this, the records of all the children at the ages of ten, twelve, thirteen and fourteen were retabulated. These ages were taken because at all of them children are found scattered through the grades from the lowest to the highest.

There were 3304 of these children. Those ten years old numbered 910, the eleven year olds 842, those of twelve years 664, those of thirteen years 496, and of the fourteen year olds there were 392. The following table shows how they were distributed among the grades, and how many were suffering from each sort of defect:

PHYSICAL DEFECTS OF 3304 CHILDREN IN NEW YORK CITY.

| GRADE | Number Examined | Without Defects | Having Defects | Enlarged Glands | Defective Vision. | Defective Breathing | Defective Teeth. | Hypertrophied Tonsils. | Adenoids. | Other Defects. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.......... | 33 | 6 | 27 | 12 | 4 | 6 | 17 | 11 | 5 | 7 |
| 2.......... | 263 | 40 | 223 | 103 | 64 | 65 | 139 | 81 | 68 | 56 |
| 3.......... | 608 | 96 | 512 | 127 | 142 | 90 | 334 | 148 | 82 | 96 |
| 4.......... | 892 | 260 | 632 | 99 | 233 | 90 | 364 | 195 | 108 | 140 |
| 5.......... | 619 | 236 | 383 | 52 | 157 | 40 | 198 | 104 | 41 | 36 |
| 6.......... | 453 | 164 | 289 | 18 | 110 | 58 | 141 | 59 | 17 | 42 |
| 7.......... | 299 | 87 | 212 | 13 | 84 | 35 | 77 | 43 | 17 | 36 |
| 8.......... | 137 | 30 | 107 | 11 | 39 | 5 | 45 | 18 | 5 | 14 |
| Total.... | 3304 | 919 | 2385 | 435 | 833 | 389 | 1315 | 659 | 343 | 427 |

A child of ten in the first grade is so badly retarded that we may fairly call him dull and we shall be wrong in only a few cases of children who entered school very late indeed. We may feel even surer that a child of eleven, twelve, thirteen, or fourteen in the first grade is dull. A child of ten in the second, third, or fourth grade is normal. In the fifth or sixth grade he is bright. By making appropriate changes in the grades, similar statements can be made for the other ages. Using this as a basis, the following schedule was drawn up for rating our children at the ages of ten to fourteen:

DIVISION OF PUPILS INTO DULL, NORMAL AND BRIGHT GROUPS BY AGES AND GRADES.

*Ages.*

| GRADES | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|
| 1.......... | dull | dull | dull | dull | dull |
| 2.......... | normal | dull | dull | dull | dull |
| 3.......... | normal | normal | dull | dull | dull |
| 4.......... | normal | normal | normal | dull | dull |
| 5.......... | bright | normal | normal | normal | dull |
| 6.......... | bright | bright | normal | normal | normal |
| 7.......... | bright | bright | bright | normal | normal |
| 8.......... | bright | bright | bright | bright | normal |

Using this as a basis, the records were retabulated, the pupils distributed among the three groups and the results worked out in percentages. They are shown in the following table:

DULL, NORMAL, AND BRIGHT PUPILS SUFFERING FROM EACH SORT OF DEFECT. AGES TEN TO FOURTEEN, INCLUSIVE. ALL GRADES.

| | Dull. | Normal. | Bright. |
|---|---|---|---|
| Number of children examined.. | 407 | 2588 | 309 |
| Defects per child............ | 1.65 | 1.30 | 1.07 |
| | | Percentages. | |
| Enlarged glands ......... | 20 | 13 | 6 |
| Defective vision ......... | 24 | 25 | 29 |
| Defective breathing ....... | 15 | 11 | 9 |
| Defective teeth ......... | 42 | 40 | 34 |
| Hypertrophied tonsils ..... | 26 | 19 | 12 |
| Adenoids ............... | 15 | 10 | 6 |
| Other defects ............ | 21 | 11 | 11 |
| Defective ............... | 75 | 73 | 68 |
| Not defective ........... | 25 | 27 | 32 |

Here the results are very different from those discussed so far. In every case except in that of vision the children rated as "dull" are found to be suffering from physical defects to a greater degree than the "normal" or "bright" children. It is true that 75 per cent of the dull children are defective as compared with 73 per cent among the normal and 68 per cent among the bright children. These differences are very slight. But the defective dull child has on the average 1.65 defects as against 1.07 for the bright one. In other words, the number of defectives among the dull children does not differ widely from the number among the bright ones, but the dull child is found to be much more defective in degree.

That hypertrophied tonsils and adenoids have a distinct bearing upon retardation seems to be clearly indicated by the fact that the former are found in 26 per cent of the dull children and only 12 per cent of the bright ones, and in the case of the latter the percentage falls from 15 to 6. A similar condition is found in the cases of enlarged glands, defective breathing, and defective teeth. In each the falling off is sharp and consistent as we move from the dull to the normal and bright groups. It is too consistent to be dismissed as accidental or not significant.

The case of defective vision, however, is far from being so clear. Found in 24 per cent of the dull pupils, 25 per cent of the normal ones, and 29 per cent of the bright ones, it is difficult to account for it. We have already seen that defective vision increases slowly with advancing age. A computation of the individual ages of the dull and bright pupils in the groups here studied shows that the dull ones are older than the bright ones. Nevertheless they have better eyesight. The explanation may be that we are here dealing with extreme cases. The pupils we designate as bright are very young indeed for their grades and in all probability include a number who have injured their eyes through undue use and strain. Even a small percentage of such cases would account for the difference observed.

The computations establish in a convincing manner the close connection between certain physical defects and school progress, but they do not tell us just how great the retarding influence is or what part the different sorts of defects contribute to it. To throw light on these problems, computations were made showing the average number of grades completed by the ten year old pupils who were found to be free from physical defects, the grades completed by those suffering from enlarged glands, and so on for each of the other kinds of defects. Similar computations were made for the eleven, twelve, thirteen, and fourteen year old children. Finally the central tendency for the entire group was ascertained. The results are illuminating.

AVERAGE NUMBER OF GRADES COMPLETED BY PUPILS HAVING NO PHYSICAL DEFECTS COMPARED WITH NUMBER COMPLETED BY THOSE SUFFERING FROM DIFFERENT DEFECTS. CENTRAL TENDENCY AMONG 3304 CHILDREN, AGES TEN TO FOURTEEN YEARS, IN GRADES ONE TO EIGHT.

| | |
|---|---|
| Children having no physical defects | 4.94 |
| " " enlarged glands | 4.20 |
| " " defective vision | 4.94 |
| " " defective breathing | 4.58 |
| " " defective teeth | 4.65 |
| " " hypertrophied tonsils | 4.50 |
| " " adenoids | 4.24 |
| " " other defects | 4.52 |

The notable feature of the table is the fact that in every case, except that of defective vision, the children suffering from each sort of physical defect made less progress in their school work than did those not so handicapped. The seriousness of these handicaps in terms of percentages is shown below:

TABLE SHOWING THE EXTENT TO WHICH CHILDREN SUFFERING FROM EACH SORT OF PHYSICAL DEFECT PROGRESS MORE SLOWLY THAN DO CHILDREN WITH NO DEFECTS.

| Kinds of defects. | Per cent of loss in progress. |
|---|---|
| Enlarged glands | 14.9 |
| Defective vision | none |
| Defective breathing | 7.2 |
| Defective teeth | 5.9 |
| Hypertrophied tonsils | 8.9 |
| Adenoids | 14.1 |
| Other defects | 8.5 |
| Average | 8.8 |

In this table the average loss of 8.8 per cent which appears in the last line is not, of course, the numerical average of the percentages of loss corresponding to the different sorts of defects, but rather the general loss of progress discovered among all the children having physical defects. In other words, the children suffering from physical defects made on the whole 8.8 per cent less progress than did those having no physical defects.

These figures are important, not so much because they represent typical conditions, for they undoubtedly do not, but rather because they constitute almost the first quantitative measure so far secured of the retarding force of physical defects. The New York examination establishes the important principle that except in the case of vision, older children have fewer defects; and it shows that when children who are badly retarded are compared with normal children and very bright children in the same age groups, so that the diminishing of defects through advancing age does not enter as a factor, the children rated as "dull" are found to have higher percentages of each sort of defect than the normal and bright children. In this generalization defective vision must be excepted.

Moreover, the New York investigation gives us quantitative measures of the retarding forces of the different kinds of defects. In general, children suffering from physical defects are found to make 8.8 per cent less progress than do children having no physical defects. Children suffering from enlarged glands and adenoids are retarded most. Hypertrophied tonsils, defective breathing, and defective teeth are in general somewhat less serious in their effects. No statistical correlation is shown between progress and defective vision. It must be remembered that these results are from a few schools in one city and are not presented as representing general or typical conditions. Moreover, the same child is often suffering from several sorts of defects, so that the figures do not really show the retarding influence of each sort of defect separately. For instance, we find that children suffering from enlarged glands are retarded to about the same degree as are those with adenoids. But these are to a great extent the same children. Most of those having adenoids also have enlarged glands. Thus the figures while having distinct value as revealing general tendencies, must not be interpreted as showing with exact precision the relative retarding force of each separate sort of defect.

# STARVATION AND MENTAL DEVELOPMENT.

By C. Homer Bean,

*Terre Haute, Indiana.*

It is generally accepted that the conditions of infancy and early childhood may have an effect, favorable or unfavorable, upon the entire subsequent development of the child. It has been maintained, for example, that the child learns more in the first five years than in all the rest of his life. It is seldom, however, that the arrest of mental development which may follow upon adventitious physical conditions is so well established as in the case of a boy who came under my observation at the age of sixteen years and two months. According to the physician who was in charge at the time of birth, this child, whom we shall call Elmer, was born an entirely normal infant. The mother did not nurse the child, but fed him upon one of the well-known manufactured foods for babies. He assimilated so little of this food that growth was stopped, and his body wasted away until he was little more than a skeleton. When the boy was six years of age, the family physician arrived at the conclusion that this malnutrition and arrest of development was due to starvation alone. At this time, according to the testimony of the parents and friends, the child was a suffering infant, as helpless, small, and wordless as when a month old. As soon as the cause of his condition was known, he was taken to the country and fed upon the fresh milk of one cow. The return to health was immediate and growth began soon afterwards.

When my investigation was undertaken, Elmer was well proportioned, and almost as tall and heavy as the average boy of his age. A rigid medical examination found him in excellent health. He gave no evidence of physical deformity or asymmetry. His general appearance betrayed no lack of normal mental development. His voice was normal and well modulated. His manner was pleasing and his conduct gave his parents and teachers no concern, but he was not able to do the work of the sixth school year, although he had spent five years in the public schools, one year in a private school, and two years in the practice school connected with the School of Education of the University of Chicago.

At this point in his development I was asked to give him individual instruction as a private tutor. To assist me in my work and to determine his mental status in comparison with that of other boys of his age, I undertook a series of experimental tests. Elmer's extreme sensitiveness on the subject of his backwardness, made it necessary for me to conduct all my experiments as lessons. This fact, combined with the pressure of my university work at the time, and the early departure of his family for the summer vacation, limited the amount of data which I was able to obtain and made it impossible to apply exact methods in some experiments. The mode of procedure employed determined: 1. His ability to receive impressions, to remember and correlate his past experiences, and to express himself; 2. What he had already learned, what were his interests and what he could do; and 3. The opinions of his teachers and parents concerning his physical and mental capacities and the history of his physical and mental life. This order was followed in the conduct of my investigation, because I believed that the opinions of his parents and teachers should supplement but not bias the experimental investigation. In order to secure norms of comparison, two average boys from the sixth grade, and two boys of his own age were selected to be tested with him in certain of these experiments. The present report concerns itself with the mental condition which was revealed through the application of these methods of inquiry.

We shall first consider the condition of his sense organs, because their sensitivity determines the amount and character of the response which he could be expected to make to the stimulation of the external world.

Sensitivity of touch was measured by the two-point threshold upon the distal phalanx of the index finger of the left hand. The threshold was found to lie between 2 and 2.5 millimeters and evidenced normal sensitivity.

Each eye was tested separately for distinctness of vision. An oculist's chart was placed twenty feet from him, and he was asked to tell what he could see. Title pages of books printed in the same size of type used on the chart were also employed in like manner in order to make sure that his spelling of the chart was not due to some previous experience with one like it. He read one line more than can be read by the normal eye. A second test was made by hanging on a wall a white card on which had been drawn two parallel vertical black lines, one centimeter long, and one millimeter apart. The subjects were required to approach the card very slowly, and to tell what they saw. Elmer saw two lines at a distance of eleven decimeters. The average distance at which the two boys of his age were able to see the two lines was, with small variation, nine decimeters. A single horizontal black line two centimeters long and about one quarter of a millimeter wide was drawn on a white card to test clearness of vision. Elmer approached within 6.5 meters of this card before he could see that the card had a line on it. The average distance for the other boys was 5.42 meters. These tests give evidence of slight hypermetropia in each eye. No test was made to find whether the retinæ were in a healthy condition, but as no pain in the eyes was experienced after studying several hours on dark days, it is to be presumed that they were approximately normal. Judging from tests with the well-known figures consisting of concentric circles and of radiating lines, no astigmatism of any significant degree could be found in either eye. The boy sorted the Holmgren skeins in such a manner as to show no signs of color-blindness. He used water colors with sufficient accuracy to indicate that his judgment of color was excellent. The abnormality in Elmer's eyes was therefore too small to hinder perceptibly his acquisition of knowledge.

Elmer's threshold of least intensity of sound was found by the watch test to be 1.62 meters, and was practically equal in the two ears. This was three decimeters less than the average of the thresholds of the two boys of his age. Judgment of pitch was next tested. He thought that the two lower strings of a guitar were tuned at the same pitch, when they gave beats of five per second. As only one trial of this kind was made, the result had naturally little value. Simple German ballads, which he had never before heard, were sung to him, and after hearing them once, he could repeat them without an error. When some of these tunes were modified so as to make them less melodious, he reproduced them without hesitation. But when a tune which he had once heard was slightly altered, he objected. This gave sufficient evidence of fairly good judgment of pitch.

Tests in rhythm with auditory stimuli were made by means of a metronome. The instrument was placed on a piece of felt in a box, the lid of which was so padded that it could be opened and closed without noise. Elmer was seated with his back toward the box. The lid was raised to give accent to certain clicks of the metronome. Thus the most usual accents in music, those of 2-4, 3-4, 4-4 and 6-8 time were given. But he insisted that the metronome merely said, "Click, click, click, click." His attention was then called to the accented beats in 4-4 time until he could indicate them. But this did not seem to aid him in discovering the accents in the other kinds of time. Elmer seemed, therefore, to be quite below the average in feeling for rhythm.

The examination of the higher stages of the knowledge-gaining process involved an investigation of imagination, memory, attention, and interest.

To determine Elmer's type of imagery, words and objects were used which were familiar to him in form and meaning. Several lists of twelve words each were prepared, and all the words of each list were read to him at a time, or he was permitted to read the words once on a brief exposure. He was then asked to reproduce all the words that he could remember. When these words were repeated orally, he was able to remember eight words having an auditory content, six words of visual content, two words of motor content but none without any sensuous imagery. When written words were exposed long enough to be read once, he remembered seven auditory, five visual and two motor words. Thirty small objects were exposed long enough for him to see each object once. He remembered only nine of them. In so far as a conclusion can be drawn from these few data, Elmer remembered auditory words better than visual words; words that he had heard, better than those he had seen; he remembered visual words better than visual objects.

That his memory was assisted very slightly by meaning, is shown in his remembering *broom* as *brook,* and *lamp* as *lamb.* The small part that meaning played in his memory processes was also evident in the fact that he committed a jargon of words with rhyme and rhythm as readily as he committed a stanza of equal length with meaning. The knowledge that Elmer acquired most easily was deficient in meaning. For example, he learned pure mathematics as readily as the average child; but he could do nothing with its applied form. He could not state reasons for steps in a process, but could follow reasons if not too difficult. He could learn only the most mechanical elements of English grammar, and could not write intelligently about the most familiar objects. He spelled poorly, as did other children in the School of Education, because spelling was taught there only by criticism of written work, and never by drill. However, he learned spelling with surprising ease when taught in the usual way. He prepared four lessons each day in an eighth grade spelling book, and did this so well that frequently he did not miss a word for five days. Several stories of history, interesting to children, were read to him. The only parts of these stories that he could repeat were a few names. Two or three out of perhaps a dozen events in each story were recognized by him when the stories were told again. People were to him inexplicable, vacillating, inconsistent. He could not anticipate what a person would do under any set of controlling circumstances. The same was more or less true with respect to all physical objects except plants.

Through some unknown influence, he had for about a year shown an increasing interest in plants. He knew the uses of the various organs of plants. He had learned the names, the time of blooming and the conditions of growth of nearly all the plants commonly sold in green-houses, of many wild plants, and of forty or more of those in Washington Park. In nearly every window of his home were potted plants of various kinds which he had bought with his spending money. The yard about the house gave abundant evidence of the same interest. His ignorance of ordinary animals contrasted strangely with his knowledge of plants. Geography interested him only in so far as it referred to plants. Maps meant nothing to him; for he could not comprehend anything that he had not seen. The larger part of a list of questions regarding the sources, nature, and uses of about two hundred common objects drew forth such answers as, "I don't know," "Wool grows on the wool plant," "Pocket-knife blades are made of silver," "Butter is made of lard and soap," "I don't know." At first Elmer read blunderingly even the most simple reading matter. He hesitated over words that he could read rapidly when he was urged to hurry. He soon learned to pronounce words readily, but he could make his reading expressive only to a limited degree. He could get little meaning out of simple reading matter. Hence he could put little meaning into it. These observations and experiments point toward the conclusion that Elmer comprehended meaning with difficulty, and that therefore meaning could give him little assistance in memory or in any other process.

Untrained attention is a common cause of failure in school work. In the study of attention, the subjects crossed out the *a*'s in a page of printed matter. Elmer and six other children of fourteen years used the same prose selection. An effort was made in one portion of the experiment to keep the speed constant and to allow the accuracy to vary, and in another portion to keep accuracy at a maximum and to allow the speed to vary. But this effort was unsuccessful. Elmer made one omission for every 16.5 *a*'s that he marked out, and the others made one omission for every 3.26 *a*'s marked out. Elmer crossed out 55.6 *a*'s per minute. The others crossed out, on an average, 14.2 *a*'s per minute. Elmer's attention gave much greater speed and accuracy than the average speed and accuracy of the others.

The capacity for self-expression was measured in terms of accuracy, rate, and force of movement, and in terms of fatigue. Accuracy of movement was tested in the following manner. A sheet of smooth white paper with ruled lines nine millimeters apart, was tacked on a thin board of the same size. A ruler was fastened over the paper so that its true edge was on one of the ruled lines. The board was placed on a table in such a way that the true edge of the ruler was toward the right and parallel with the arm used in writing. The subject was then told to begin each stroke with the pen on the paper and against the edge of the ruler, to move the pen to the right, and to stop it on the first ruled line. Two strokes were made per second. A rest of one minute was allowed after each one hundred and twenty strokes. The fingers and wrist functioned about equally in these movements. Each boy made six hundred strokes. The boys of Elmer's age succeeded in stopping on the line in 29 per cent of their strokes, the sixth grade boys in 17 per cent of their strokes, and Elmer in 26 per cent of his strokes. The board was then fastened to the wall at such a height that when a boy stood up to write, his elbow and shoulder functioned about equally in the movement. As these joints are accustomed to a wider range of movement, the strokes were to be stopped on the second line. The correct strokes were, for the older boys 18.1 per cent, and for the younger boys, 11 per cent, but for Elmer only 3.27 per cent of the total number of strokes.

Thus Elmer appeared to have very poor control over the larger, centrally located muscles, which are involved in this movement of the arm. The complex motor act of throwing at a target was undertaken as a further study of the control of the shoulder and arm muscles. Quantitative results could be obtained from the throwing of the other four boys, but none from that of Elmer, because he could seldom hit a target one meter by one meter in size, at a distance of four meters. Another indication of the relatively greater lack of control over the larger muscles than over the smaller ones was found in his drawing. In some of his drawing lessons his arm was stationary on the table, and his fingers and wrist performed the movements. Other lessons were conducted in the parks with only a pencil and a drawing pad. In this case the elbow and shoulder played the principal parts in the movements. A great difference was evident in these two sets of drawings. His smooth, legible penmanship also showed, as do the facts recited above, that the wrist and fingers were under much better control than the elbows and shoulders. His work in manual training gave additional proof of the same difference. He could draw plans, and mark off his work as well as the other boys who were working near him. But he could not keep a back-saw within one-sixteenth of an inch from a line, or an ordinary saw within much greater limits. Around a nail that he had driven could always be seen a display of hammer marks, some of them as much as three inches from the nail. Weaving and paper-cutting, in which the fingers did most of the work, were tasks in which he excelled. In the gymnasium, where the shoulder muscles are the most used, practically every exercise that he undertook was a failure. Every evening and every Saturday the boys played ball on vacant lots near his home. But even when there were not enough boys for a team, Elmer was not allowed to play, because his slow, awkward, weak movements hindered more than they helped the game.

Power of movement, and fatigue, were tested by means of the dynamometer. His right hand registered twenty-eight kilograms, and his left hand twenty-four kilograms. The average readings for sixteen year boys in the Chicago schools are, for the right hand forty-four kilograms, and for the left hand thirty-seven kilograms. This indicates that Elmer was 35.8 per cent weaker than average boys of his age. When dynamometric records were taken every half minute, fatigue decreased his grip within the first ten minutes nearly three times as fast as it did for the other boys of his age. His readings also showed wide, spasmodic variations due to lack of motor control. In order to discover whether any of these motor phenomena were due to chorea, Elmer was told, during a geography lesson, to extend his right hand toward the east and his left hand toward the west, and to tell in which direction he was facing. There were no asymmetries in the positions of the arms and hands. Neither in this nor in his manner of lying down and rising were there any signs of chorea.

This investigation as a whole, inexact and fragmentary as it is in some parts, established, at least as probabilities, a strange combination of psychological conditions. The normal factors, on the one hand, were found to be passive touch, clearness of vision, color vision, health of retina, acuteness of hearing, accuracy and rapidity of discrimination, interest in plant life, and memory. He could learn readily, reading, writing, spelling, drawing, water color painting, music, and pure mathematics. Slight differences from the majority of people were found in acuteness of vision, type of imagery, and control of hands. Astonishing deficiencies presented themselves in the control of the larger muscles, and the knowledge of the most common, every-day, immediate facts of life, including that knowledge of people which makes possible the study of such a subject as history. His teachers thought that he was becoming more stupid every day. But the facts seem to me to point in the opposite direction, for the development of the control of the large muscles and of knowledge of everyday matters, takes place chiefly in the first few years of a child's life. It was some time after this conclusion was reached that Elmer's father reluctantly revealed the story of the boy's life, of which the significant facts have been given in the first paragraph of this article.

During the first six years of life, he had seldom moved a muscle. This means that he did none of the lashing about that brings every healthy child into knowledge-yielding contact with objects. Although a temporary arrest of mental development during the common school period may entail only a temporary loss, this fragmentary study has shown, at least, that the dropping out of the first six years of mental development is a loss which, under ordinary conditions, may be largely irretrievable.

## REVIEWS AND CRITICISM.

*Report of Committee on Delinquent and Dependent Children Including Truancy, Juvenile Courts and Poor Relief.** State Association of Town and City Superintendents. [Franklin, Ind.] 1908. Pp. 40.

In the present state of our knowledge each new study not only adds to our knowledge of local conditions, but contributes something to the elucidation of the general problem of retardation. Not infrequently such studies present new facts, or lay a new emphasis on those already familiar. In the present report the statistical substructure is loosely put together, but the presentation is a striking one. The facts purport to relate to seven thousand children, and are gathered in "about twenty-five cities in all parts of the state," and "usually by returns from one representative building." Had such a method been followed throughout, the results, valuable as they are for the several grades, might be equally valuable in the aggregate, as representing a typical distribution by grades and ages in Indiana schools. But we are not given a general age and grade table by which to judge at a glance whether such a condition obtains. Since, however, we are given both the number and percentage of over-age pupils in each grade we may by calculation construct the grade totals as follows:

| | |
|---|---|
| Grade 1 | 1000 |
| Grade 2 | 905 |
| Grade 3 | 573 |
| Grade 4 | 1006 |
| Grade 5 | 936 |
| Grade 6 | 887 |
| Grade 7 | 982 |
| Grade 8 | 729 |
| | 7018 |

Obviously this is not a normal grade distribution, in which each grade would be successively smaller than the next preceding. Any properly calculated average of the whole, taking into account as it should the numbers in the several grades, must be considerably affected by such an abnormal grade distribution.

In the absence of a general age and grade table which would have shown at a glance the weaknesses of the material, we find instead a number of subsidiary tables and some effective diagrams. Reducing these tables to a compact statement we have the following:

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*Copies of this report may be obtained from the chairman of the committee, Supt. A. O. Neal, Franklin, Ind.

STATISTICS OF 7000 CHILDREN IN INDIANA.

| GRADE | RANGE OF AGES | | | PUPILS OF MINIMUM AGE | | AVERAGE PUPILS | | | MOST FREQUENT AGE | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Youngest years | Oldest years | Difference years | Age in years | Per cent of pupils in grade | Standard | Number of pupils | Per cent of pupils in grade | Age in years | Per cent of pupils in grade approximate* |
| 1 | 5 | 12 | 7 | 6 | 58 | 9 yrs. or over... | 48 | 4.8 | 6 | 57 |
| 2 | 5 | 15 | 10 | 7 | 51 | 10 yrs. or over... | 67 | 7.4 | 7 | 44 |
| 3 | 6 | 14 | 8 | 8 | 36 | 11 yrs. or over... | 121 | 21.1 | 9 | 32 |
| 4 | 7 | 16 | 9 | 9 | 35 | 12 yrs. or over... | 155 | 15.4 | 9 | 30 |
| 5 | 9 | 17 | 7 | 10 | 29 | 13 yrs. or over... | 148 | 15.3 | 11 | 29 |
| 6 | 9 | 18 | 8 | 11 | 33 | 14 yrs. or over... | 126 | 14.2 | 12 | 23 |
| 7 | 10 | 18 | 8 | 12 | 34 | 15 yrs. or over... | 111 | 11.3 | 13 | 26 |
| 8 | 11 | 17 | 6 | 03 | 35 | 16 yrs. or over... | 70 | 9.6 | 10 | 22 |
| | | | | | | | | 12.4 | *Estimated from diagram. | |

This table serves to bring out the wide variations in ages which are posssible in the several grades, though in the absence of exact figures we cannot determine how much significance is to be attached to the extreme figures. The gradual decline in the percentage of pupils of the minimum age until the fifth grade is reached is another interesting factor. In the discussion of over-age pupils it is regretable that a standard should be adopted which differs from the one commonly in use, since it makes comparison with familiar figures more difficult. No good reason is assigned for making over-age pupils in the first grade those of nine years and upward, instead of eight years and upward. The reason given points to the common usage. The increasing proportion of over-age pupils revealed by these figures as the grades advance, and the diminishing proportion as the upper grades are reached is familiar. But it is quite unusual that the maximum proportion of over-age children should be in the third grade. Let us compare these results with those of Fort Wayne, computed on the same basis of retardation from the table reprinted in the report:

PER CENT OVERAGE.

| Grade | 7000 Indiana Children. | Fort Wayne, 1906–07, 5558 Children. |
|---|---|---|
| 1 | 4.8 | 3.0 |
| 2 | 7.4 | 5.5 |
| 3 | 21.1 | 8.9 |
| 4 | 15.4 | 15.6 |
| 5 | 15.8 | 16.6 |
| 6 | 14.2 | 12.3 |
| 7 | 11.3 | 7.0 |
| 8 | 9.6 | 5.3 |

The Fort Wayne figures make a showing directly comparable with those observed in other cities. Here the maximum retardation is in the fifth grade. In Dr. Cornman's study we find it to be in the fourth grade in Kansas City and in the fifth grade in Camden, Boston, New York and Philadelphia. If the statistical basis of the Indiana investigation were a given system, or a group of systems, or even a normal distribution of grades, a maximum retardation in the third grade would be a very striking fact. As it is we are forced to the conclusion that it results from the choice of the figures presented for consideration.

In regard to the retardation of 12.4 per cent for the whole body of children reported upon, it may be said that this average is gained by taking the percentage column, adding it up and dividing by eight. This is certainly not a scientific way of getting an average. We are told that 846 children were retarded in an aggregate of 7000. This is 12.1 per cent. The difference is not noticeable, but it is certain that were the grades more uneven in number the result might be quite different.

If we have gone into a somewhat detailed analysis it is not with any desire to underrate the many excellencies of this report. It is particularly strong in its presentation of facts by means of diagrams; and in its appeal to the interest of schoolmen is probably more effective than some of the more carefully worked out statistical treatments of the subject. If it does not, as stated, very accurately measure retardation, there can be no doubt that it proves the existence of the problem, and makes a strong plea for the special treatment of the backward child. From the conclusion that there is a need for special ungraded schools in every community with a school population of one thousand or over, there is likely to be little dissent.

R. P. F.

The Psychological Clinic

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# IRREGULAR ATTENDANCE IN THE PRIMARY GRADES.

BY RALPH L. JOHNSON, M.A.,
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For some years my attention has been arrested by the fact that of children enrolled for periods of equal length, those who attended the greatest number of days had in general the highest class standing. Of the ten classes graduated from the high school in Upper Darby, five of the valedictorians (the pupils with highest standing) had attended during three years a greater number of days than any other member of their respective classes; two of the remaining valedictorians never missed a day during their senior year; one missed only one day during the senior year; another had missed only twenty-six days in three years; the remaining valedictorian repeated one of the years.

If there is such a definite relation between attendance and class standing on graduation, we may expect that irregular attendance will show itself to be equally effective in producing retardation, which, in many cases, is simply the result of a failure to be promoted annually from grade to grade. In the school district of Upper Darby in July, 1908, 43 per cent of the pupils were one or more years behind the theoretical age limit;* 23 per cent exceeded the age limit by two years or more; 9 per cent by three years or more, and 4 per cent by four years or more. Many children do not leave the first grade until they are nine or ten years of age. Some of the children are enrolled in the first grade for as long a period as four years. Why?

Supt. Schaeffer, in the Pennsylvania State report for 1908,† says "Retardation is partly due to defective systems of promotion. Teachers are always afraid that their work will be criticised by those above them, if pupils are promoted whose preparation is not adequate in every particular. The retardation of pupils may be due to ill health or other cause which can be removed."

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*The schools of Danville, Pa., in 1908 showed a retardation of 74.7 per cent. Report of the Supt. of Pub. Inst. of Pa., 1908, page 154.

†Report of the Supt. of Pub. Inst. of Pa. for the year ending Jan. 1, 1908, page 11.

A great "other cause" is poor attendance, especially in the lower grades. While the educational system of the United States may be the best in the world, nevertheless, as Dr. Falkner claims, "The question is not, Is the education good or not, but *do they get it?*" They do not get it in the primary grades. The primary children do not enter late, they do not stop early, but they do attend school irregularly.

In order that I might present a definite statement of the extent of irregular attendance, I collated the records of the attendance of children in all the grades of the school district of which I am supervisor. Upper Darby is a township contiguous to Philadelphia on the west. There are seven settlements, from five of which the attendance records have been examined and analyzed. In one of these, the records of the eight elementary grades were studied for ten years; in another for five years; in another for eight years, and in the other two for six and five years respectively. The high school records, which were also examined and classified in the same manner as the grade records, cover a period of fourteen years.

Four thousand and forty-one (4041) annual records or enrolments were examined and the data classified in five sections. In the high school section, grades nine to eleven, there were 392 enrolments, including both boys and girls; in the intermediate sections, grades four to eight, there were 883 boys in one section and 914 girls in the other, a total of 1797 enrolments; in the two primary sections, grades one to three, there were respectively 958 boys and 894 girls, a total of 1852 enrolments. These 4041 enrolments do not represent as many different children. So far as this study is concerned the same child might have been represented with as many as fourteen enrolments. As a matter of fact he is never represented with the maximum number possible. Some of the children, however, were enrolled on the records for twelve years, nine in the grades and three in the high school. These children would appear in my data with twelve annual enrolments. Very few were represented with as large a number of enrolments as this. In all, 874 children are involved.

Although the number of children is relatively small, nevertheless the records of a small group of children over a long period may furnish better data for conclusions than the records of a large group of children for a short period of time. Epidemics, unusual weather conditions, or some local disorder are less likely to have a disturbing influence upon the results.

Table I shows the percentage of pupils who have attended for each ten-day division. Thus, of the 958 primary boys enrolled, 5.2 per cent attended between 141 and 150 days; 3.2 per cent between 101 and 110 days, and so on. The inspection of this table does not show any significant differences between the attendance of the boys and girls, either in the intermediate or primary grades. A summary of the results has therefore been prepared in table II, showing the percentages of pupils, boys and girls together, in the high school and in the intermediate and primary grades, attending more than three-fourths of the time; from one-half to three-fourths of the time; from one-quarter to one-half of the time; and the percentage attending only one-quarter of the time or less. Seventy-one per cent of the high school pupils attended more than three-fourths of the time; 62 per cent of the inter-

TABLE I.

PERCENTAGE OF ATTENDANCE.

| Days attended | High School | INTERMEDIATE | | PRIMARY | |
|---|---|---|---|---|---|
| | | Boys 4–8 | Girls 4–8 | Boys 1–3 | Girls 1–3 |
| 191—200 | 35.8 | 22.9 | 21.6 | 8.4 | 8.9 |
| 181—190 | 16.5 | 14.9 | 16.0 | 10.9 | 9.1 |
| 171—180 | 9.7 | 7.9 | 11.8 | 8.7 | 8.6 |
| 161—170 | 5.6 | 7.8 | 9.3 | 7.6 | 8.3 |
| 151—160 | 3.4 | 6.7 | 5.1 | 5.7 | 6.1 |
| More than ¾ | 71.0 | 60.2 | 63.8 | 41.3 | 41.0 |
| 141—150 | 2.4 | 5.2 | 2.8 | 5.2 | 5.2 |
| 131—140 | 2.9 | 3.4 | 3.3 | 3.8 | 4.1 |
| 121—130 | 2.4 | 2.9 | 3.3 | 3.8 | 4.6 |
| 111—120 | 2.0 | 4.0 | 2.8 | 5.2 | 3.9 |
| 101—110 | 2.9 | 2.9 | 1.2 | 3.2 | 2.1 |
| ½ to ¾ | 12.6 | 18.4 | 13.4 | 21.2 | 20.3 |
| 91—100 | 1.5 | 1.8 | 1.5 | 3.7 | 2.6 |
| 81— 90 | 2.0 | 1.0 | 1.6 | 1.6 | 2.0 |
| 71— 80 | 1.5 | 2.7 | 1.5 | 3.0 | 3.2 |
| 61— 70 | 1.8 | 2.7 | 1.5 | 1.9 | 3.9 |
| 51— 60 | 2.0 | 1.6 | 2.9 | 3.6 | 3.4 |
| ¼ to ½ | 8.8 | 9.8 | 9.0 | 13.8 | 15.1 |
| 41— 50 | 1.4 | 2.0 | 2.0 | 3.7 | 4.0 |
| 31— 40 | 1.3 | 2.5 | 3.7 | 5.9 | 5.7 |
| 21— 30 | 1.3 | 2.5 | 3.2 | 5.4 | 4.8 |
| 11— 20 | 1.3 | 3.5 | 4.0 | 6.2 | 5.6 |
| 1— 10 | 1.8 | 1.1 | .9 | 2.5 | 3.5 |
| ¼ and less | 7.5 | 11.6 | 13.8 | 23.5 | 23.6 |

mediate pupils attended more than three-fourths of the time, and only 41 per cent of the primary pupils. Thus the primary grades are at a marked disadvantage in comparison with the high school grades, so far as attendance is concerned. In the eight grades below the high school, barely one-half, 51 per cent of the children, attended more than three-fourths of the time. In 1908, 60 per cent of the children in these grades were promoted. The percentage promoted does not differ much from the percentage attending more than three-fourths of the time. Sixty per cent promoted may seem low, but this figure is based upon the total enrolment, and not upon the number who took the examinations, as is so often done in statistics of promotion.

TABLE II.

PERCENTAGE OF ATTENDANCE (SUMMARY).

| Days attended | High School | Intermediate | Primary |
|---|---|---|---|
| More than ¾ | 71.0 | 62.0 | 41.1 |
| More than 140 days | 73.4 | 66.0 | 47.0 |
| ½ to ¾ | 12.6 | 15.9 | 20.7 |
| ¼ to ½ | 8.8 | 9.4 | 14.4 |
| ¼ and less | 7.5 | 12.7 | 23.5 |

Of the pupils attending less than three-fourths of the time, we find the following interesting comparisons. Attending between three-fourths and one-half of the time, we find 12 per cent of the high school pupils, 16 per cent of the intermediate, and 21 per cent of the primary pupils. Attending between one-half and one-quarter of the time, we find 9 per cent of the high school pupils, 9 per cent of the intermediate, and 14 per cent of the primary pupils. Attending one-quarter of the time or less, we have 7 per cent of the high school pupils, 12 per cent of the intermediate, and 23 per cent of the primary pupils. About one-quarter of the primary pupils miss three-fourths of the time for which the table has been prepared. If "doing time" in school is essential, we should expect that irregular attendance of this character would necessitate extra years on the student's part to cover the grades. The law presumes that satisfactory attendance does not permit of more than six days' absence each month, that is to say, every pupil is supposed to be present 70 per cent of the time, or 140 days in 200.* In grades four to eight, 34 per cent fail to attain this standard of attendance, and in grades one to three, 53 per cent. That the migratory families cannot make up this difference appears from the fact that such families have children above the age of the primary grades, as well as children in these grades.

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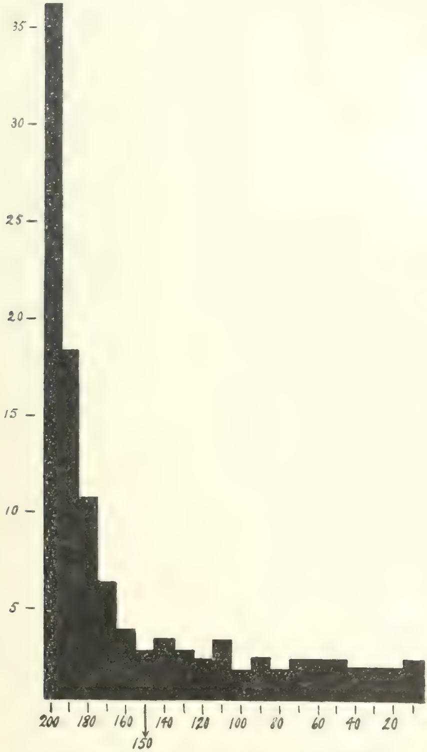
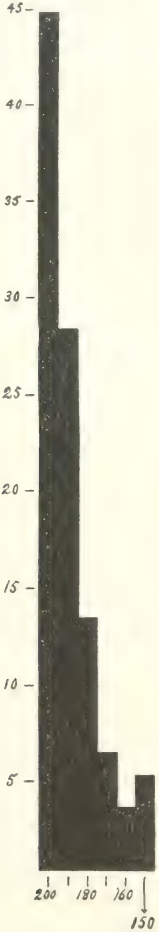
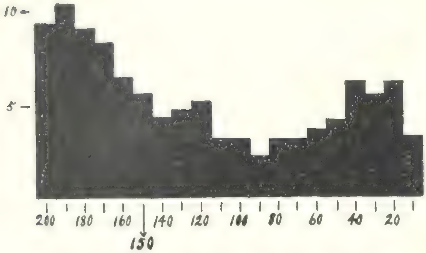
*Act of May 29, 1907, Section 1, P. L., page 316. "The school board in each district shall have power, at its June meeting, to reduce the period of compulsory attendance to not less than seventy per centum (70 per centum) of the school term in such district."



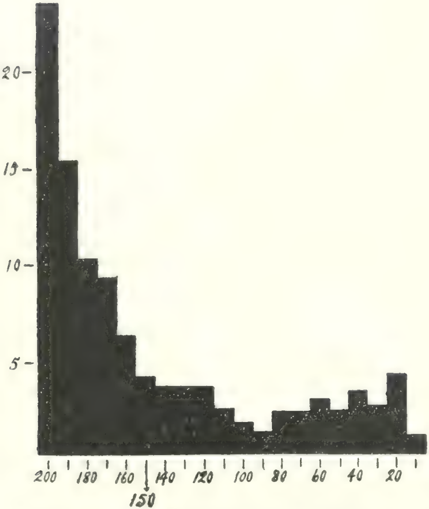
Curve I—High School Grades 9-11, Boys and Girls.



Curve II—High School Pupils Who Graduated.



Curve IV—Primary Grades 1-3, Boys and Girls.



Curve III—Intermediate Grades 4-5, Boys and Girls.

The results of tables I and II are shown graphically in curves I to IV, pages 93 and 94. Curve I shows the state of affairs in the high school. The days attended are distributed along the base line in divisions of ten each. The percentages of children attending are shown in the vertical column and by the height of the curve above the base line. The curve shows that 36 per cent of the high school pupils attended between 191 and 200 days; 18 per cent attended between 181 and 190 days, etc. The arrow points to those who attended between 141 and 150 days, just meeting the presumption of the law. The part of the curve to the right of this section indicates the relative proportion of high school pupils who failed to meet the requirements of the law.

Curve II exhibits the attendance of those high school pupils who graduated. Forty-four per cent attended 191 to 200 days. No pupil graduated who did not attend at least 141 days, the minimum requirement of the law. This is the best curve of attendance. Pupils who get the most from the school, give the maximum of time to it. If children are really to obtain the advantages which the schools offer, the curves for all grades should approximate the form of curve II.

Quite a different condition of affairs is shown in curves III and IV. Of the intermediate boys and girls, only 66 per cent have attended 141 days or more, meeting the presumption of the law. Both curves, but especially the curve of the primary grades, are too stocky. Too large a percentage of the children are attending too small a number of days per annum, as is shown by the large area of the figure which is to the right of the arrow indicating the minimal requirement of the law. In both curves a second rise is to be observed at the right of the curve, more distinctly noticeable in curve IV than in curve III. In fact the curves have two maxima, the one on the left showing that the largest number of pupils have attended from 170 to 200 days, and the one on the right showing that a larger number attended from 10 to 50 days than attended from 80 to 100 days. There is evidently some cause at work which is responsible for this marked tendency of children, especially the primary children, to attend school for a very small number of days each year. This tendency, which is more pronounced in the primary than in the intermediate grades, does not appear at all in the high school.

If a table of absences be compiled to compare the high, middle, and primary grades, it will look like this:

| | High Grades 9-11 Per cent. | Intermediate 4-8 Per cent. | Primary 1-3 Per cent. |
|---|---|---|---|
| Missed ¼ time ........ | 29 | 38 | 59 |
| " ½ " ........ | 16 | 22 | 39 |
| " ¾ " ........ | 7.5 | 12.5 | 23 |

A very important cause of retardation in the primary grades is inadequate and irregular attendance. The public schools are for the education of the people. The parents and guardians of children must be educated by the public school authorities to appreciate the effect of irregular attendance. Once retarded does not necessarily mean always retarded, but it is extremely difficult for a child to pick up what has been lost in the primary grades. This fact should be brought home to parents. The primary grades are perhaps the most important part of the school system. We should give more serious attention to our public school beginners and to their beginnings.

# A SIMPLE AND PRACTICAL TEST OF HEARING.

By E. A. Kirkpatrick,
*State Normal School, Fitchburg, Mass.*

All persons who have had much experience in testing the hearing of children, will agree that such tests are not easily made with accuracy. It is still more difficult to record the results of such tests in a form that will mean much except in relation to other tests made by the same person, under the same conditions. The requirements of the new state laws in Massachusetts, Vermont, and Connecticut, that teachers shall test the sight and hearing of their pupils, has made it especially necessary that a simple test and form of record should be found.

At the Fitchburg State Normal School a group test has been adopted that is more quickly made and more accurate than individual tests. As many as fifteen children may be tested at once in an ordinary school room. They are placed five each in the two outside rows and the middle row of seats. They are supplied with paper and pencil, and asked to keep their eyes to the front while the teacher, standing on the right, opposite the middle pupil, pronounces in a low, distinct tone, and in a low, distinct whisper, a series of numbers which they are required to write as a dictation exercise. After four or five numbers have been given in a low tone, and as many in a whisper, the children change seats, those nearest going to the farther side of the room and the middle row taking their places, those in the farthest row coming to the middle row. After dictating another series of numbers, the moving is repeated, and another list of numbers is given. This completes the test of the right ear, all pupils having been tested at three distances—near, far and medium. The left ears are tested in a similar way. The teacher then collects the papers, and marks them one for every digit written correctly. The marks of the children for the right ear and the left ear respectively are then averaged. The record of each ear for each child is then recorded in the form of a fraction, the denominator of which is the average for the group (or for the whole room tested by the same teacher), the numerator of which is the number of digits correctly written by the pupil for that ear.

This record shows accurately the acuteness of the hearing of each child *as compared with that of his mates*, regardless of the size of the room, its quietness, and the loudness and distinctness of the voices of the teachers who have made the test in different schools. All but the first grade may be tested in this way, but it is well in the lower grades to give a little preliminary practice in writing numbers in columns, as they are spoken in an ordinary tone of voice, so that the children will not have to give thought to getting them arranged properly. To avoid confusion, let the pupil write the numbers spoken to the right ear on the side of the paper on which he writes his name, and those spoken to the left ear on the other side. It is well, after giving a number, to say in an ordinary voice, "Write." The children who do not hear can make a dash in place of the number.

If five different numerals are given for each series in a low tone, and the same number in a low whisper, the total number of digits given in testing one ear will be thirty. The test will have been satisfactorily made if the number heard averages about twenty. This will mean that the teacher has spoken in a sufficiently low tone to make it impossible for those in the farthest row to hear. It is well for the teacher to give herself a little practice in speaking in a low but distinct tone and whisper, before making the test.

# OUR SCHOOLHOUSES.

By William Estabrook Chancellor,
*Superintendent of Schools, South Norwalk, Conn.*

In 1906 a commission was appointed by act of Congress to report to that body a plan of a better type of schoolhouse for the District of Columbia. The commission was composed of the Superintendent of Schools, the Supervising Architect of the Treasury, and the Engineer Commissioner of the District. Two members were, therefore, expert builders. This commission, of which I was chairman, visited many of the important cities of the country—among them New York, Chicago, Boston, St. Louis, Cleveland, Rochester, Syracuse, Springfield and Worcester—and published a report now known as Senate Document No. 338, Sixtieth Congress, First Session. We examined every one of the one hundred and fifty-six schoolhouses of the district. We visited in all twenty-five other cities. In addition, I myself have visited schools in the more remote parts of the country, including the South and the Pacific coast. In all, I have examined some fifteen hundred schoolhouses. This paper is a summary of some things I have seen and some opinions I have formed.

How bad some of the conditions are I do not like to say. I have too much patriotic pride, and too great a sense of the decencies of public print. I have visited many schoolhouses which smelled like prisons, there being no warrant why either schools or jails should have an offensive odor. I have seen schools where boys and girls used the same outhouses. I have seen schools which were obviously firetraps. I know that most schools are firetraps, but those to which I refer defied even the dullest "common sense".

On the other hand, I have seen a few beautiful, commodious and safe buildings. I have seen even some locations and grounds which were really adequate for the best educational purposes. While I have seen nothing as good as the competent school architect with adequate resources could provide, I have seen approximations to such ideals.

As I have not yet been able to visit all the important cities and all the states, it would be invidious for me to cite any state or any city as either the worst or the best. I have certain cities in mind which deserve the brand of infamy in respect to their schoolhouses, but it may be that there are some others equally bad. Until the advent, some half dozen years ago, of Colonel John Biddle, U. S. A. Engineer Corps, as Commissioner of the District of Columbia, the city of Washington, the alias of the district, was perilously near being the worst city of America in respect to its schoolhouses, partly because of the indifference of Congress, partly because of the quarrel, a century old, between the "Nationals" and the "Domestics". Since that time, however, there has been a radical improvement.

In those cities where the board of education has the power to bond the municipality for schools, we generally find the best conditions, while the worst conditions are usually to be found where the board has no power at all over schoolhouses. To this rule, however, Boston is a notable exception.

I can also say that where the board, the city council, or the schoolhouse commission, employs a genuine school architect who gives his entire time to that work, we have the best new schools. Chicago secured such an architect by competitive examination determined by architects, with the result that the work of that city in recent years has been unsurpassed in this country. Four men have done so much more and so much better work for their cities than any others have been able or permitted to do, that they deserve to be specifically mentioned—Dwight H. Perkins, of Chicago; William B. Ittner, of St. Louis; C. B. J. Snyder, of New York, and R. Clipston Sturgis, of Boston. The best thing that any board member or school superintendent can do for his community in respect to new buildings is to buy a railroad ticket and spend a week investigating the new schoolhouses of some one of these four cities.

It is a significant feature of the new high school awakening of the past twenty years that in general our high schools are superior to our grammar schools. They are superior in two important respects: First, they are built to accommodate the pupils and the courses of study, and secondly, they are not structures made of new materials shaped upon traditional lines.

What are the difficulties which seem to bar the way to progress in schoolhouse construction in most cities?

*First, in relation to size of plot.*—There is an idea that a large playground for children takes a lot of real estate out of the taxable property. I have not time here to discuss this strange fallacy in all its details, nor the incidence of taxation in general, but in passing I may note two things, that the people who do not live in tenements upon the space devoted to the playground do live somewhere else and create values there, and that because they are forced out upon the periphery of the community, they have more breathing space than if they had been allowed to stay in the heart of the city. They are merely displaced. With those afflicted with taxpayers' or politicians' nearsightedness of this kind, argument is, of course, useless. I have known of cases where governing boards actually sold playgrounds which wise predecessors had had the foresight to acquire.

*Secondly, in relation to architecture.*—Most new elementary school buildings simply repeat the plan of older buildings. The idea has prevailed that so many classes of so many pupils each constitute a school. The problem was, therefore, to fix the proper size of the unit school room and then repeat this as often as may be, with halls and stairways for entrance and exit. By this plan, it has come to pass that most schoolhouses are little more than barracks. Building schools in this way is not a difficult enterprise for a board. It requires no thought, but involves simply functioning by habit. Not long ago, in a New England city, a man came out with a letter in which he explained how a certain large schoolhouse came to be what it was. His explanation, in a few words, was that he himself, in his capacity of a board member, sat down one evening and drew the plans, and that next day the contract was let—for eighty thousand dollars of the public money. This school has inner halls without light, the halls being six feet wider than necessary. The reduction of this space would have more than paid an architect's fee of five per cent. Cubical contents cost so much per unit, a fact that this economist did not deem worth considering. Moreover, because the halls have no light, there is a monthly gas bill for illumination representing five per cent per annum upon a thousand dollars. And, in addition, the building is so ugly as to be a direct detriment to every piece of property near it. I cite this merely as an illustration.

Another city had thirteen schools to build at one time, and twelve architects entered the competition. This community awarded a school to each of the architects, the assignment of the odd school being determined by lot. By this happy procedure, the city avoided hurting the feelings of eleven architects, and acquired some fine examples of freak schoolhouses.

*Thirdly, in relation to replacement.*—Here is the worst of all the troubles. Once up, a schoolhouse stays apparently forever. In nine cases out of ten, there is no economic motive for replacement. Its users are children without power to help themselves. The building may grow musty. The street level may be changed. The character of the neighborhood may be revolutionized. But for want of occasion and for want of rivalry, the building stands. The only way to get an old building torn down is to have it condemned by the board of health, and this is seldom possible. It is too easy to tinker the hulk into the appearance of availability.

Occasionally, a neighborhood radically improves, and, when it becomes of sufficient political importance, it is able to induce the powers that rule to give it a better schoolhouse. But these instances make the common presence of the old schoolhouse only the more apparent. We are carrying our schoolhouses now, for all America, at the book-value of $843,000,000.* We have no knowledge as to what they are really worth. Many are utterly worthless. Some are positively dangerous.

*Fourthly, in relation to the teachers.*—It is an irritating fact to men who believe in living in the world as a part of it, that so many schoolmen as regards practical things are wanderers in a fog of ignorance. I recall an experience of the schoolhouse commission. We had finished inspecting a fine, large building. Our guide was the school principal, a man in middle life. As we prepared to depart, we asked him what the building had cost. He did not know. We then asked in what year it had been built. He did not know that. Finally, we asked the name of the architect or the contractors. He did not know. Now this was but a small community, and the principal had lived in the town at the time the schoolhouse was built. The people paid him the generous salary, for a rural town, of two thousand dollars, yet he evidently regarded these material concerns as outside his interests. The druggist across the street from this fine property had all these items at his tongue's end. This may appear a trifling incident, but in the light of many such experiences in nearly every state of the Union, I am not an optimist with respect to the ability of school principals to prepare boys for real life. The principals accuse the superintendents of being long on business, short on pedagogy; the superintendents are warranted in replying that the principals are dead to the every-day life going on about them.

I have known principals to give up small salaries in beautiful new school buildings to take slightly larger ones in miserable structures, and then not be able to tell in what respects, if at all, the latter were superior to the former. It is small wonder that in our cities and towns the more practical board members are not particularly interested in the views of the pedagogues.

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*Report of Commissioner of Education, 1908.

I remember well one case in which the commission were gravely informed that the old building was really superior to the fine new one that replaced it because in the old building was a tower from which the principal could command the entire recess yards, whereas in the new schoolhouse he was compelled to go down stairs and walk around the yards. This was told to us by a young man, twenty-nine years of age, in apparently splendid health. I cite this illustration in order to make it clear that criticisms of schoolhouses by pedagogues are not invariably valid.

One more illustration will suffice. In a certain city stands an eight-room brick building with no cellar. The principal was sure that the absence of a cellar was desirable because there was, in consequence, no playroom in the basement to be looked after in rainy weather.

I may summarize the situation by saying that the school architects and the school superintendents are combining in America to give better schoolhouses to the pupils, and are usually opposed in their efforts by taxpayers, by traditionalists, and by politicians more or less often in league with contractors. Not infrequently also they are opposed by the principals of schools. It is unpleasant but necessary to add that they are often opposed by architects who occasionally build schoolhouses, but who have never entered fully into the problems of schoolhouse construction.

The first requirement for a good schoolhouse is one so commonly neglected that many rooms in a majority of American schools should be abandoned for classroom purposes. This requirement is that into every such room the direct sunlight should come at least one hour every day. It is easy enough on a proper area of land to secure this result. There are all varieties of available floor plans,—the square, the rectangle, the T, the U, the L, the X, the H, the E, the Y, and various combinations of these. I have seen new schools in which there are northeast rooms and northwest rooms taking their light only from the north, whereas they might equally well take it only from the east or west. Sunlight is the true germ killer. And yet I know a large city school in which the janitor invariably shuts the inner blinds of every classroom throughout holiday periods.

Often, in the case of a new building, one does not discover for years what the trouble is with the north rooms. But as surely as the sun shines, just so surely this sunshine is needed in every room occupied by human beings for considerable periods of time. The sunlighted rooms of even badly ventilated old structures never smell as foul as do the unlighted rooms. Reflected sunlight and diffused sunlight have lost their greatest health value.

Every building of more than one story should be fireproof. In order to secure this requisite, it is necessary to spend from six to eight thousand dollars per room. Many cities have the latter maximum now. One of the beneficent results of the Schoolhouse Commission of the District of Columbia was that its report convinced Congress of the desirability of strictly fireproof construction. And since then all appropriations have been based upon the last named figures. I have heard it argued that rural schoolhouses of two stories need not be fireproof. There are one hundred and fifty schoolhouses burned down every year. These fires are by no means confined to cities. Fireproof construction is the true economy not only of life but also of money.

Schoolhouses should also be panic-proof, as far as that is possible in dealing with children, who are peculiarly susceptible to panic. For this there are two requirements. The stairways should be two for the first four classrooms above the ground floor, and one for every two additional classrooms. A building with twelve classrooms above the first floor requires six stairways. These stairways should be of such a width as to permit two people to pass up or down side by side or one up and one down, which means four and a half or five feet wide. Where there are three or more stories the singular stairway used in New York city is admirable. This permits up and down pairs of stairs in the same space, and is a remarkably ingenious device. The other requirement is that the hallways should not be too wide, the width, of course, depending upon the number of rooms opening out upon the hallways. The general standards are twelve to fourteen feet for hallways with four rooms opening upon them, and one foot more for each additional room. It is exceedingly important that nowhere shall there be a "neck-in-the-bottle" construction by which children are forced into narrower spaces as they move forward. Outside doors must open outward, and they must be as wide as the hallways.

Each hallway should be lighted fully from end to end by daylight. This seems axiomatic, but it is a requirement often neglected.

It is no longer considered good school practice to have general basement toilets. The best plan is that adopted in Chicago, where what is known as the "tower plan" is used. By this plan the ventilation of the toilets is isolated from the general system, and separate rooms are provided for each group of one hundred or more boys or girls. These accommodations are arranged conveniently upon each floor.

Every child needs twenty square feet of floor space in his classroom, and as many more in his playroom. The Indiana standard of fifteen feet is too low. The ceiling height should be at least twelve feet, and in the South it should go to fifteen or sixteen feet as the minimum. It follows that for forty-two children, therefore, the schoolroom should be in area either twenty-four by thirty-two or twenty-five by thirty feet.

The lighting surface of window glass should be twenty per cent of the floor surface, and the height of the window glass at least sixty-five per cent of the floor width. It is no longer necessary to argue for unilateral or quadrant lighting. We have come to understand the dangers of cross-lights to the eyesight and nervous system.

We must have forced ventilation both summer and winter. The lives of not a few eminent architects and engineers are being devoted to this one matter. The air in the rooms must be fresh all the time. It is not enough that it should be occasionally renewed, and it must be introduced in such a way as not to cause drafts. By so-called "practical" people, I have often been asked what windows are for, if not primarily to be opened and shut. Windows are for light.

Our schools should be the molds into which the building materials are poured, not our buildings the molds into which the children are poured. We need many rooms seldom present in elementary schools but coming at last into the high schools. Among such rooms, I would specify:—

an art museum and a science or nature museum;
an assembly hall;
a music room;
a drawing room or studio;
exercise or drill halls for physical training, with shower baths attached, preferably one hall for each sex;
a library and reading room;
rooms for teachers, for principal, for janitor;
various shoprooms for manual training, domestic science and art, and the crafts.

This will cost money to secure? Yes, indeed. Boston has already spent a vast sum upon that finest school building in

America, the Charleston High School, which has, however, no playgrounds. It has equipped the building with lockers, so that every desk in it may be used by three different sets of pupils,—evening, afternoon and morning, if necessary. The little town of Naugatuck, in Connecticut, has a high school almost equally fine,—the gift of a millionaire who is a civic patriot. Let us have fine buildings, and let us use them all the time.

We are going to spend a great deal more money every year upon public education in America. I am sorry to say that most of the increase will not go to raise teachers' salaries. It will go for new buildings. The time will come when for our new buildings we shall be looking for a higher grade of teacher. The general public can see the good of the money which it spends upon school buildings, but it cannot yet see the good of the money which it spends upon teachers. That will come in time.

We are now entering upon a building renaissance in schoolhouse construction; it is well, therefore, for educators and students of education to think seriously and to inquire carefully into the kind of buildings we really need. Everywhere the chief trouble is plain ignorance on the part of all concerned. The financial board knows no better, and the architect, if there is one, knows no better, and the teachers who must use the building know but little more. Once a school superintendent actually defeated the proposal of a good architect for a ventilating system in a new school by saying to the board that "operating it would prevent the teachers from doing proper classroom work."

I have but three practical suggestions to make. First, there are now three books upon schoolhouse construction which are worth studying.* Secondly, it is eminently worth while to buy a railroad ticket and proceed to inspect such of the newer school buildings as may be within reasonable distance. It will not do to accept these in toto, but they are bound to prove suggestive. Thirdly, schoolmen, whether superintendents or principals, should advise the powers who build schoolhouses in their own communities as to the ideals and standards they themselves have in mind. The attitude, "I will take what I can get," may be finally necessary, but, in some instances at least, the demand for high standards has been productive of good results.

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*Briggs, W. R. Modern American School Buildings. N. Y., Wiley, 1902.
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# THE EFFECT OF SCHOOL ROOM TEMPERATURE ON THE WORK OF PUPILS.*

By Linnaeus N. Hines,
*Superintendent of Schools, Crawfordsville, Ind.*

One of the present-day problems is the heating and ventilating of buildings. It is only within the last few years that much attention has been paid to the proper introduction of air into buildings, its distribution in correct amounts and at the right temperature. Through thousands of years architecture did not concern itself very much with properly heating and ventilating edifices. The development of the study of medicine, and especially of hygiene, has led to a fuller appreciation of what the human organism needs. The increasing warfare against lung diseases and investigations into causes and the conditions in which they originate and thrive have brought the world to a fuller understanding of what is needed to preserve and lengthen human life.

To-day, despite what the world has learned, no greater crimes of ignorance against public health are committed than the defective planning of our homes, our schools, our churches, our railway coaches, and all the places where people congregate. Nothing is so cheap as pure air, yet so sparingly is it provided in the great majority of our public buildings and in our dwellings that, in spite of the general warfare against the white plague, this disease continues its widespread devastation.

The greatest sins of carelessness and indifference are committed against children in our public schools. We compel children to attend our schools for so many hours every school day in the year, and then and there deprive them of the cheapest and most necessary of God's gifts to man, fresh air. Compelling children to attend school is right, but forcing them to spend the school hours in poorly ventilated and improperly heated rooms contributes as much, perhaps, to the poor health of the youth of our land as any other one cause. The laws of every state ought to provide that the heating and ventilating of school rooms shall be in the hands of a commission of experts who would no more allow school to be held in a room improperly heated and ventilated than in a building which is on fire or about to fall down, or which has been closed on account of smallpox. Certain rules for heating and ventilating buildings should be laid down and every patron of a school should have the right to go to court and prevent the holding of school sessions in buildings which fail to come up to the necessary requirements. School rooms throughout the length and breadth of our land are not properly ventilated—they are overheated and they are underheated. This is a crime against the childhood and youth of our country. A smallpox case appears in a school and there is at once the greatest excitement for fear that the children generally will be stricken. Pupils are kept in poorly ventilated and improperly heated school rooms year in and year out—their health is undermined; diseases of the breathing organs develop—results more disastrous than those entailed by smallpox are produced; yet school authorities and patrons go on in their careless and criminal ignorance, sacrificing the health and even the lives of the pupils who are under their care. To my mind it is more dangerous to sit for one whole day in a room full of foul and improperly heated air than it is to risk the danger of contagion from smallpox. Some day, slowly moving public opinion will demand that the health of our school children shall be more carefully guarded.

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*Paper read before the Third Annual Congress of the American School Hygiene Association; February 25, 1909, Chicago.

In the foregoing I have said much about ventilating and heating buildings. In the minds of ignorant school authorities everywhere, heating and ventilating a school building are one and the same thing. It is true that the two things are interwoven and are generally treated together, but temperature alone is a subject presenting many interesting problems.

For a generation, perhaps, men have seen the need of contrivances whereby buildings may be heated by more effectual means than the old fire place and the more recent stove. Ingenuity has supplied the need. But there has arisen a new need and that is the controlling of the temperature of our buildings—schools, churches, homes. School rooms should be neither too hot nor too cold. The temperature in such rooms should remain at practically the same point all the time. To attain that end has been one of the problems of the heating expert in recent years. No architect and no set of school authorities, who pretend to have even a half-way notion of their responsibility, will construct a school building at the present time without providing for the very best means of controlling the temperature of the building. Control of the temperature may be any one of three varieties,—automatic control, janitor control, or teacher control. The first is the best, the second system, janitor control of the temperature, may be almost as good as automatic control but is likely to be much worse. The poorest system of all is that in which the teacher is depended upon to see that the room is at the right temperature.

Teacher control of the temperature is the poorest, because the teacher who is thoroughly wrapped up in her recitations will forget to adjust dampers and cut-offs, and, being in the room, variations in temperature will not be so readily noticeable. A faithful janitor, if he is given the proper apparatus, can control the temperature of the school rooms better than the teachers. The automatic apparatus will do the work best of all.

The proper control of the temperature of the school room has two advantages. First, by holding the temperature at the right point there is an immense saving of fuel. Second, the keeping of a school room at an even temperature tends to secure the health and comfort of both teacher and pupils. To quote one authority, "A class room that is too cold causes physical discomforts which may result in ill health. A class room that is too hot is even worse. The average teacher will resort to an open window for relief. The draughts from these open windows are certain to bring on coughs and colds which only too frequently end in throat and pulmonary troubles. The cause of education is as much promoted by hygienic surroundings and the physical comfort of pupils as by teachers and text-books."

As ventilation and temperature are closely associated, so are temperature and humidity. The percentage of moisture in the air of the school room, we are told, has much to do with the amount of heat necessary to keep the occupants comfortable. The house atmosphere during the winter months in our country is about as dry as that of a desert. The drier the air in a room, the higher the temperature will have to be in order to insure physical comfort. School experiments in Boston indicate that a degree of humidity ranging from 40 to 50 per cent in the winter time is the best. In all experiments as to the right amount of heat necessary for a school room it must be borne in mind that the humidity of the atmosphere in the room has much to do with the problem. In the tests described below, however, the element of humidity was not considered.

Most authorities seem to agree that the temperature of school rooms should be kept uniformly at seventy degrees. The Pennsylvania legislature passed in 1905 a very practical law governing the erection of school buildings. This law provides that all buildings shall be properly lighted, ventilated and heated, and that the buildings shall be "warmed to maintain an average temperature of seventy degrees Fahrenheit during the coldest weather." The only trouble with the law is the word "average" in the passage just quoted. A temperature ranging from sixty to eighty degrees might average seventy degrees but it would be very injurious to the health of the pupils. If the law should require an absolute temperature of seventy degrees, throughout all the hours of every school day during that part of the year when artificial heat is needed, it would come much nearer enforcing perfect conditions.

The overheating of school rooms is probably the commonest form of misdemeanor along the line of failure to maintain the proper temperature. Fuel is plentiful and furnaces are made to do full duty in the way of consuming their daily toll. Americans generally keep their houses too hot. A school room that is too hot causes the children to perspire. Going forth into a cold atmosphere causes chilling. Manifold cases of disease follow such action. Low temperatures likewise produce evil effects. The physician is all too familiar with the harvest of sickness and death which the school room has prepared in hundreds of communities. Numerous as are the evil physical effects of keeping children in improperly heated school rooms, there are added mental effects which show themselves in the work of the pupils from day to day.

It has been said above that most authorities are agreed that a temperature of seventy degrees is the proper one to maintain in the school room. That may be true in some localities. However, it is my firm belief that a temperature of sixty-eight degrees, or even slightly lower, would be far better, not only for the general health of the pupils of the schools but for the mental results obtained. I beileve this to be especially true of such a climate as has Indiana—considering the humidity that prevails there and other climatic conditions. If the individual never suffers himself to remain in an atmosphere heated above sixty-eight degrees he readily adjusts himself to the condition and is comfortable. Furthermore, he can do better mental work. It is the commonest kind of an observation that when a school room becomes too warm, the pupils become dull and listless. They do not work so readily nor so accurately. Usually the higher the temperature, the poorer the results. On the other hand, if a room is allowed to become too cold, the results are almost as poor. There is a happy medium somewhere on the thermometer and it is that medium which many efforts have been made to find.

Recently, in the school system with which the writer is connected some experiments were made of the effects of different temperatures on the work of pupils. These experiments were conducted in three different rooms, in three different buildings. The pupils were all of the sixth grade. The teachers, Messrs. B. G. Keicher, L. B. Lookabill and Frank McGeath, helped in the experiments. The pupils knew nothing of what was going on, except that they were asked to undergo occasionally certain mental tests. The effects of the different temperatures were noted. Some of the notes were as follows: Temperature of 80 degrees, the class was restless, dull and incapable of continued mental effort; 76 degrees, the class was dull and sleepy, penmanship was poor; 75 degrees, class was dull and complained of the heat; 74 degrees, not quite so dull as above; 72 degrees, restless; 70 degrees, excellent work, cheerfulness in class; 68 degrees, best work, to-day seemed their best; 66 degrees, splendid work; 65 degrees, class happy and full of work, some complained about the room's being cold; 60 degrees, too cold for good work, complained of the cold.

On the first day of the test, one room was held for an hour at a temperature of 80 degrees, the second at 75 degrees and the third at 70 degrees. At the end of the hour a list of words for written spelling was given to each set of pupils, the same list in all three rooms. The average of the class on this list in the room at 80 degrees was 58.8; 75 degrees, 77; 70 degrees, 78.2. The cooler the room, the better the average. The difference here between 70 and 80 degrees in temperature caused a difference in scholarship average of 20 per cent.

The second day, all three rooms were held at 76 degrees. Another test in spelling was given. The averages were 74.5, 75.2 and 72.7 per cent. The averages were thus practically the same, there being a difference of only three per cent between the highest and the lowest. The averages were not as good as those of the day before in the two rooms having lower temperatures.

The third day, all three rooms were held at 74 degrees for an hour in the forenoon. A test in spelling was given. The averages were 78.7, 81 and 82.1 per cent. The difference between the highest and the lowest was only four per cent. The general average of all three rooms was higher than those of the preceding two days and the temperature was lower. In the afternoon, the temperature of all three rooms was 65 degrees. This was cooler than the rooms had been before, and the pupils are reported to have had more energy and life. The averages were 82.7, 85.2 and 81.5 per cent. The general average of all classes was the highest yet and the temperature was the lowest. The last test was in spelling, as the others had been.

The fourth day, the three rooms were held at 68 degrees all afternoon. The pupils seemed to be at their best. Two tests were given. The first was in spelling just before recess, and the second was on a set of examples in the fundamental processes just before the close of school. With the same temperature in all three rooms, two of the classes received almost exactly the same per cents on the spelling test, while the third for a local reason fell lower. The averages were 58.6, 72.4 and 72.3 per cent. In the second test of the afternoon, the averages were 72.7, 91 and 90.6. The averages in two of the rooms were again almost identically the same, while the third fell below the others from another cause.

On the fifth day, two tests in arithmetic were given. For an hour the rooms were held at 70 degrees. The averages were 88.7, 83.5 and 88.4 per cent. The variation was only five per cent. In the second test, the temperatures were 70, 60 and 80 degrees. The averages were 86.1, 84.3 and 91.7. The examples given, it developed, were too simple to entail any severe test on the classes, and consisted in multiplying whole numbers of more than one digit by numbers of one digit.

The sixth day's test was another one in arithmetic, involving work in decimals. The temperature was 72 degrees in all the rooms. The averages were 75.8, 90.5 and 80.9 per cent. The general average of all the classes in a temperature of 72 degrees was not so high as when the temperature of all three rooms was 70 degrees.

The seventh day involved two tests in arithmetic. The first temperature tried all around was 68 degrees, and the second 66 degrees. The averages in the first test were 86, 90 and 91.5. On the second test, they were 82.3, 94.5 and 88.8. The variations were not large. The general average of all the classes was higher at 68 degrees than at 66 degrees.

On the eighth day the last tests were given. Sixty-eight degrees was the temperature again in all the rooms. The averages were 68.9, 80 and 77.7. The test was in spelling, two different sets of words being given out. On the second set the averages were 75.5, 77.7 and 81.7 per cent. The variations again were not large.

These tests were somewhat crude and it may be claimed for them that they do not prove much. However, in a general way, they seem to show that the best school room work can be done in a temperature ranging between 65 and 70 degrees. They also show that the more the temperature of a room rises above 70 degrees, or falls below 65 degrees, the poorer will be the work done in that room. Taken all around, with right conditions as to humidity, I should judge that a temperature of 68 degrees in the school room is the right temperature and that any wide variation therefrom for any considerable time is an injury to the welfare of the children committed to our care.

Another test of the effect of temperature was made in three third grade rooms. One of these rooms, because of a defective heating apparatus which failed to do the work required and was therefore being rebuilt, had for the period of about eight weeks a temperature averaging 66 degrees. One of the other two rooms had an average temperature of 70 degrees, and the third one about 71 degrees. Toward the close of this period, tests in arithmetic and English were given. The pupils in the coolest room received the best grades in both cases. There had been times when the one room was too cold for good work, but there never had been a time when the brains of the children were dulled because of the excessive heat. The children of the other rooms were listless at times because of the heat. During a good part of this time the pupils in the cool room attended only a half day while the others attended all day. In spite of the half day attendance, the pupils in the cool room excelled those in the hot rooms who attended all day.

During the same eight weeks the building in which this cool room was located had more or less trouble on account of not being able to keep the temperature up to 70 degrees. Tests were given simultaneously in this building and two others, in the fourth, fifth and sixth grades, as well as the third. In a total of thirteen tests in four subjects, the building with the lowest average temperature excelled either one or both of the others nine times.

Recent tests in certain English schools show that pupils can do good work in a temperature of 60 degrees, and that the best work was done with temperatures ranging through the sixties. The writer of this paper did not make many tests with extreme temperatures because of the danger of injury to the children. Children are frequently poorly clothed and consequently a little higher temperature may be required. Children coming from homes that are habitually overheated also demand more heat in the school room. Numerous differing conditions must be dealt with. The wise school authorities will bend every effort towards securing for the schools under their care heating appliances that can be easily regulated or that regulate themselves. If the janitor or the teachers are to manage the amount of heat which enters a room, then the superintendent should see to it that accurate records of the temperatures are kept every day. Variations can be noted and corrections can be demanded. One of the important duties of the superintendent of school officers is to see that their buildings are not only heated, but heated properly. They can serve their patrons well by attending most faithfully to this matter during all the days of the year on which heating of the school rooms is required.

The results of heating school rooms improperly are hard to detect. They are so bound up with the results of improper ventilation that differentiation is almost impossible. But the evil effects of improper heating exist. In some future day conditions will be improved, knowledge will take the place of ignorance, and the school room, instead of being a place of danger to the youth of our land, will of all places be the safest and best not only for the moral but also for the physical welfare of the child.

## REVIEWS AND CRITICISM.

*Civics and Health.* By William H. Allen, with an introduction by William T. Sedgwick. Boston and New York. Ginn and Company, 1909. Pp. xi + 411.

"Civics and Health" is just what the publishers have called it, a "handbook on getting things done." It is a splendid campaign document. Not the least of its merits is its easy quotability. We shall search through it in vain for any admission that there are two sides to a question, but it is as full of catchwords and battle cries as an egg is of meat. It is more than a book; it is an exhibit, where every chapter is a booth hung with striking placards and pictures displaying in the most convincing manner the conditions which are found to be in need of reform. It would be impossible to find any single volume which can give so much help to those who are already working for the health of the community. Superintendents who are urging their boards to provide for medical inspection will find in it arguments to strengthen their appeal. Societies working for the passage of child labor laws may turn to it for facts and figures to convince their legislatures. Health officers who are asking for the appointment of school nurses to enforce their recommendations may obtain from the book statistics that will justify their demand. Finally, and this is perhaps where the book will do the most good in an inconspicuous way, the grade teacher may learn from it the knack of presenting facts of everyday hygiene more vividly to her class, and by becoming observant herself of the signs of health in her pupils, may train them to habits of greater cleanliness and alertness.

The author has organized his material excellently for presentation. The book is divided into five parts:—

I. Health Rights.
II. Reading the Index to Health Rights.
III. Coöperation in Meeting Health Rights.
IV. Official Machinery for Enforcing Health Rights.
V. Alliance of Hygiene, Patriotism, and Religion.

Chapter XVII makes clear the difference between merely "doing things" and "getting things done." Doing things is wasteful at best, while getting things done is simply the most effective and economical way to bring about a hygienic millennium. For instance, "It may take a year to convert a police magistrate whose sympathy for delinquent parents and truant children is an active promoter of disorder, but a magistrate convinced, efficient, and interested is worth a hundred volunteer visitors. To get things done in this way for a hundred thousand children costs less in time and money than to do the necessary things for one thousand children."

The opening chapter on "Health a Civic Obligation" is one of the best, if it be possible to choose the best chapter in a book whose standard throughout is high. The last chapter is probably the poorest. When Dr. Allen quotes the dictum of Agassiz, "A natural law is as sacred as a moral principle," and brings in patriotism as a motive for cleanliness, he carries the reader back to the still recent period when no advertisement, whether of "ships, or shoes, or sealing wax," was considered complete without a picture of the American flag, and when no public gathering could be adjourned without first singing the "Star Spangled Banner."

The chapter on "Dental Sanitation" is particularly valuable because so little that is really trustworthy has previously been written on the subject. Here as elsewhere Dr. Allen goes straight to the root of the matter. He finds the reason for the social inferiority of the dentist as compared with the physician to lie in the former's lack of public spirit. He says, "The fact that it took the medical profession centuries to begin to feel responsibility for community health is no reason why the social sense of the dentist should be dormant for centuries or decades." . . . "Of fourteen dental journals in America, only one has the advancement of dental science as its first reason for existence. Thirteen are trade journals." He advocates the establishing of free dental clinics as a means of educating the public to take care of their teeth, and at the same time of educating the dentists themselves to a more dignified and less commercial attitude toward their profession.

In the very strength of the book lies a weakness. Those who are in the thick of the social fight will exult in the crashing blows of their champion's sword upon the armor of the conservatives, but the casual reader who wishes to maintain a dispassionate judgment upon the questions at issue, may perhaps be antagonized by the vehemence of Dr. Allen's demonstration.

A. T.

## NEWS AND COMMENT.

### *The Current Philadelphia School Report.*

From the viewpoint of the kind of statistical material presented, as well as the form of presentation, the Annual Report of the Superintendent of Public Schools of the City of Philadelphia for the year ending December 31, 1908, which has just come from the press, constitutes a distinct addition to the literature of educational economics. A number of the tables presented are new and significant. For instance, in the text table facing page 8, Dr. Brumbaugh takes up the matter of the time devoted to the several studies in the grades. This is a matter which has received scant attention at the hands of superintendents, but the facts disclosed in the case of Philadelphia show how important a fact it may be in the administration of a city's system. The greatest variability is disclosed among schools. In some the first grades receive 390 minutes of time per week in number work, while in others only 125 minutes are given to the same theme. Similar conditions are found in the cases of the other subjects. The total time at the command of the teacher in a week is 1500 minutes. As Dr. Brumbaugh points out, a hypothetical boy going from one school to another where the maximum time is given to the several subjects would be required to do 2945 units of work in 1500 units of time. Another of his kind in the schools where the minimum is given would have to do 640 units of work in 1500 units of time.

Recent investigations have called attention to the fact that pupils who transfer from school to school fall behind in the process, and have to repeat grades. If conditions comparable with those disclosed in Philadelphia are common in American cities the explanation is not far to seek.

The statistical tables published in the appendix of the report are a distinct advance upon those published in Philadelphia in previous years and in some respects are an improvement over those published in the report of any other city. Table 26, for example, giving the facts concerning examinations and promotions for the term ending January 31, 1908, gives the membership by grades and by districts, facts concerning promotions, average ages, number of pupils who have spent two years or more in their present grades and the average time spent by the pupils in each grade. This last fact is of particular interest. According to the report, the average time in the grades for that term was 6.9. This apparently refers to months. As the term is presumably five months in length, if we are right in assuming that the unit of measure used is months, it means that the average child in Philadelphia during the year in question spent 6.9 months in doing the work which should have been accomplished in five months. If this interpretation is correct it means that the pupils of Philadelphia are spending on the average 38 per cent more time than they should in completing the work of the grades. Here as elsewhere it is evident that pupils in the first grade make the slowest progress and those in the eighth the most rapid. The average time in the first grade is given as 7.6 (months?), while the average time in the eighth is only 5.9 (months?).

Another significant table is Table 37 which summarizes for the city data concerning grades, retardation, examinations, and promotions for the term ending June 30, 1908. Here particularly noteworthy features are that 6.6 per cent of the pupils have been more than two years in their present grades, that the percentage of those who have spent excessive amounts of time in their grades is largest in the lower grades and smallest in the higher ones, and that the percentage of average children is very different in different districts. This last fact is in accord with conditions disclosed in a recent investigation conducted in

New York City by the Russell Sage Foundation in which it was shown that the percentage of overage children is very much greater in some schools than in others. In other words, retardation is not to be considered as an evil equally permeating all districts or all schools within a system. In the case of Philadelphia in the city as a whole 36.8 per cent of the children are above normal age; in the tenth district the percentage is only 28.4; while in the third district it is 43.1. All the other districts fall between these two extremes.

It is through careful and intelligent work such as that shown in the report in question that light will be thrown on the great problems of retardation, elimination and repetition which educators are beginning to recognize as trustworthy barometers of school efficiency.

L. P. A.

### *Health and Development Supervision.*

The last legislature of the state of California passed a law providing for the health and development supervision of the public schools of the state. This law was approved by the governor April 15, 1909.

The law appears to be a piece of permissive legislation making possible the establishment in the schools of California of adequate supervision of the general health and development of the school children of that state. Already the city of Los Angeles has organized a Department of Health and Development, comprising a medical, anthropometric, and child study laboratory. Mr. George L. Leslie is the director of this department, and is in charge of the psychological clinic and developmental work. The staff includes Dr. Laura B. Bennett, in charge of young women, Dr. Herbert F. True, oculist and aurist, and Dr. Albert W. Moore, specialist in children's diseases and general physician.

The law will make possible in California the thorough-going investigation of the causes and treatment of retardation. A department of health and development more nearly expresses what is needed in connection with our school systems than does either the caption "medical inspection of schools," or "school hygiene." The provisions of the California law are so well worthy of consideration and study by every superintendent and medical officer, that THE PSYCHOLOGICAL CLINIC feels it desirable to print the text of this law entire.

"The people of the State of California, represented in senate and assembly, do enact as follows:

"Section 1. Boards of school trustees and city boards of education are hereby authorized to establish health and development supervision in the public schools of this state, and to employ an examining staff and other employees necessary to carry on said work and to fix the compensation for the same. Whenever practicable the examining staff for health and development supervision in the public schools of the state shall consist of both educators and physicians.

"Section 2. The purposes of health and development supervision in the public schools of the state are hereby defined as follows:

"1. To secure the correction of developmental and acquired defects of both pupils and teachers which interfere with health, growth and efficiency, by complete physical examination. Such examinations shall occur annually or as often as may be determined by the board of school trustees or city board of education.

"2. To adjust school activities to health and growth needs and to development processes and to attend to all matters pertaining to school hygiene.

"3. To bring about a special study of mental retardation and deviation of pupils in the public schools.

"Section 3. The requirements for certification of members of the examining staff for health and development supervision in the public schools of the state shall be as follows:

"For educators: A life diploma of California of the high school or grammar school grade and a health and development certificate which shall authorize the holder of such certificate to conduct the work authorized by this act, in those grades specified by the life diploma held.

"For physicians: A California certificate to practice medicine and surgery and a health and development certificate.

"Section 4. County or city and county boards of education are hereby authorized to grant health and development certificates to holders of life diplomas of California of the high school or grammar school grade or to holders of California certificates to practice medicine and surgery who shall present with such life diplomas or with such certificates to practice medicine and surgery a recommendation from the state board of education certifying special fitness for the work specified in this act."

### *Are Medical Inspection Statistics Comparable?*

In the current discussion of medical inspection of schools two questions have been repeatedly put forward: Have the children of country or suburban districts fewer physical defects than children of densely populated city districts; and are the findings of school doctors in respect to the results of physical examinations in one locality comparable with those announced by other school physicians in another locality?

The current report of the City Superintendent of Schools of New York publishes a report of the medical inspection during the past school year in the five boroughs of New York City which would seem to throw some light on both of these questions.

In New York City the great boroughs of Manhattan and Brooklyn are relatively densely populated and have many poverty-stricken districts. Conditions there may properly be called typical city conditions. The borough of the Bronx is less densely populated and its people are mostly quite well-to-do. It is typical of the well-to-do residential district of a large city. The boroughs of Queens and Richmond are sparsely populated and the people are nearly all well-to-do. They represent suburban conditions. The results of the physical examinations for 1907-8 show that on the average the children in Manhattan and Bronx have 3.5 defects apiece, and those in Queens 2.3. In Brooklyn and Richmond, only 1.4 and 1.6 defects are found. There would seem to be no adequate explanation for this great variation. One densely populated and one sparsely populated borough make the best showing while thickly settled Manhattan and well-to-do Bronx and suburban Queens make the worst showings.

Comparisons between the ratings of the several boroughs in respect to the separate sorts of defects show that 80 per cent of the children examined in Manhattan were defective, 85 per cent in the Bronx, 71 per cent in Brooklyn, 32 per cent in Queens and 42 per cent in Richmond.

Here the immediately striking fact is that, roughly speaking, twice as large a proportion of the children are found to be defective in the three thickly populated boroughs as in the two sparsely settled ones. A detailed study of the data, however, fails to substantiate the general conclusion that pupils in more sparsely settled districts have fewer physical defects. Take for instance the matter of teeth. In Queens, 0.06 per cent of the pupils were found to be suffering from defective teeth as contrasted with 9.8 per cent in Richmond. There would seem to be no reason why defective teeth should be 160 times as frequent in Richmond as in Queens. Among over 4500 children examined in Queens 3 were reported as having defective teeth. Among nearly the same number examined in Richmond 427 had defective teeth.

The figures seem to indicate that we have here another convincing bit of testimony as to the great importance of the personal equation in conducting physical examinations, and not as would at first appear, evidence that children in densely populated districts suffer more frequently from physical defects than do those in less populous districts. The returns are unconvincing save as a new demonstration of the incomparability of medical inspection statistics gathered from different districts, or in the same district by different people.

L. P. A.

*National Conference on Criminal Law and Criminology.*

In celebration of the fiftieth anniversary of the founding of the Northwestern University School of Law, a national conference on criminal law and criminology was held in Chicago June 6-9. The calling of this conference is the first concerted effort in this country to attack the problem of the criminal and his treatment. The conference brought together lawyers, psychologists, sociologists, social workers, and men of affairs. James Hagerman, Esq., of St. Louis, sometime president of the American Bar Association, acted as permanent chairman of the committee on organization. Three sections were organized, one on the treatment, penal and remedial, of offenders; one on organization, appointment, and training of officials, and one on criminal law and procedure. Over one hundred and thirty topics had been proposed for discussion and were assigned to the several sections. A committee on resolutions was appointed to consider and propose such measures as seemed advisable to further the interests of the conference. The chief outcome of the conference is the organization of the American Institute of Criminal Law and Criminology.

*A Conference on Child Welfare.*

During the two weeks beginning July 5th, at the call of Clark University, a group of conferences will be held in Worcester, Mass., which will bring together the leading representatives of the following institutions:—

The day nursery,
The kindergarten,
The child study movement,
Medical education of defectives and of subnormal children,
Open-air schools,
Tuberculosis work for children,
The various eugenic movements,
The psychological clinic,
School nurses and physicians,
Settlement work for children.
Boys' clubs,
Sunday-school work,
Industrial training in the early stages,
Child labor,
The Story-Tellers' League,
The children's theatre,
The playground movement,
Children's libraries and reading,
Dancing and music,
The juvenile court.

The object of these conferences is to bring together into fruitful, practical relations the movements and organizations that deal with the child in the interest of its unity, which lie in general outside the regular work of the school. It is felt that these activities have hitherto been somewhat too isolated. It is also hoped that these conferences may result in,—

A. The development of the plans of a permanent children's bureau or institute, the various departments of which shall correlate both scientific studies of children and those that seek to advance practically their physical, mental, and moral welfare.

B. A permanent national organization of organizations that have these ends in view.

The Psychological Clinic

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# CONSERVATION OF HEALTH IN THE SCHOOL ROOM.

By S. L. Heeter,

*Superintendent of Schools, Saint Paul, Minnesota.*

Despite the advance made of recent years in school architecture and in the mechanical equipment of schools by modernizing our plumbing, heating, and ventilating; despite the scientific methods of municipal boards of health in dealing with contagion and infection; despite the fact that our schools are better to-day than ever before in the history of the world, our teachers better trained, better informed and more conscientious than ever before, we cannot refute the charge that we do not properly protect and promote health in our school rooms. Great crimes of ignorance and neglect are committed against health in our city homes, flats, schools, churches, office buildings, railway coaches, and all places where people congregate.

So far as the public schools are concerned we have not yet met the problem of sanitation. I believe it is largely due to the fact that we have not placed the responsibility where it belongs. I believe we have too long held teachers exclusively responsible for matters that should be under the supervision of some one else. We certainly cannot consider our teachers responsible for the choice of a building site, for the condition of school grounds, for bad architecture, lack of drainage, defective plumbing, unsanitary water supply, the care of our school buildings and the spread of contagious and infectious diseases. And I have been forced to conclude of late that we cannot and should not ever trust our most conscientious teachers to regulate heat and fresh air in our school rooms.

Here arises the proverbial quarrel between engineer and teacher, caused by the need of fresh air on the one hand and the inadequacy of mechanical devices on the other hand. She must have fresh air and the windows go up. He cannot heat "all out doors" and the success of his mechanical device depends upon hermetically sealed rooms.

There is one question no longer in my mind. It is not a teacher's business to sweep her own floors, scrub her own blackboards, dust her own erasers, empty her own waste basket, regulate her own dampers, do messenger service day after day to engineers and janitors. We should not make sweeps and scrub-women of our teachers. I wonder if we should hold that teacher culpable who becomes so interested in the training of a child, that she forgets winds, dampers, registers, thermometers, and thermostats. Teachers and children alike should be furnished buildings properly heated, properly ventilated, and properly cared for from morning to night. The time must soon come when our engineers and janitors will be men of good health and good habits. They will then not only present a respectable appearance during school hours, but see to it that our school rooms are kept at a temperature of sixty-eight, that a constant current of fresh air is supplied to every room either by the new patent mechanical devices or by old-fashioned methods, all with due regard to health in our school rooms.

My point is that it is incumbent upon school authorities, not the teacher, to provide for our schools such physical environment as will both protect and promote health. Our laws will some day fix the responsibility and require that the heating and ventilating of every school building shall be in the hands of an expert,—engineer, janitor, or even the school principal,—some one other than the teacher doing active educational work,—who should no more be permitted to expose children and teachers five hours a day to a poorly heated and ventilated room than to expose them to small-pox in an unfumigated room.

The physical environment of the child will therefore be put under the vigilant supervision of some one other than the teacher,—but there is a different responsibility that belongs to the teacher. She must come more and more to realize her obligations to the physical child. I am strong in the conviction that we as teachers have been giving more consideration to the minds of our pupils than we have to their bodies. We have made a specialty of psychology and have slighted physiology. Except in extreme cases, we take but little note of physical abnormalities—those defects of mind and body which undermine health and defeat school progress. We have thought more about the subjects taught, methods, devices, courses of study, than about sleep, diet, physical habits, exercise, and a score of bodily ailments common to childhood. Class room instruction rather than the child and the direction of his daily life still engrosses our attention. We still crowd our children into uniform, non-adjustable desks; we fail to detect incipient cases of physical ailments and ignore the retarding effects of abnormal physical conditions; we fail as yet to adapt our requirements to the period of adolescence. We continue to classify our children according to mental attainments or years of age, and not according to physiological age; we have thus far made but little investigation into fatigue, its causes, symptoms and alleviation; we are making only a beginning at a study of the problem of defective children, retardation and elimination. Only within the last few years have we known what is meant by an adenoid face; we have just begun to discover the corrective effect of play on fatigue, malposture, defective breathing, poor circulation and similar evils; we deny our children outdoor recesses and offer no organized play and group games in the open air. The school life of the child has been lengthened, our population is congregated in cities, contagion and infection are more difficult to control, attendance is seriously interrupted by children's ailments, and yet we make our chief concern the course of study, examination, tests, promotions and graduations.

A new responsibility is laid upon us,—not the responsibility of school room sanitation, dealing with the environment of teacher and child, which should be left to board of health, school board, architect, engineers and janitors,—but a responsibility in meeting the physical needs of the individual child. Health must come first in our education scheme. Mind and body can no longer be separated in our educational process. All education must have its beginning in the physiology of the human body.

For twenty-five years our American schools have endeavored to break away from the lock-step, intellectually. All children were received too long on an equality and treated alike regardless of varying mental capacities. Our American schools have developed on the supposed democratic theory that all children are equal in mental attainment; but they are not equal, never have been, and never can be.

So, the next movement in education will break the lock-step physically, and will lead to the adaptation of the schools to meet the physical needs of our mouth-breathing laggards, and our pale-faced anemics,—boys and girls in our schools who fall behind in our intellectual programs, become disheartened, grow into an utter dislike of school, and drop out as truants only to become delinquents and incorrigibles, filling our parental schools, juvenile courts, detention homes, and state training schools.

Here is the problem before every city school system in this country, that of providing for the actual physical needs of the unfortunate half whose progress in school is defeated by abnormal physical conditions of body and brain.

We have opened the doors of five hundred thousand school rooms in this country, have offered the means of an intellectual education to the millions, have extended our school year from three to ten months; we have lengthened our courses of study and advanced our standards. We have passed our compulsory education laws and have attempted to force a modicum of learning upon every child whether he will or not. Hundreds of thousands of teachers in the length and breadth of this land make their monthly reports to parents, grade the intellectual progress or failure of children, and with it all, close their eyes to diseases, abnormalities and defects impairing school work.

Meanwhile, one-third of the youth in this land drop out of our schools with the sixth grade. They come to a point in our culture programs where they stop short. They are physically and mentally and socially incompetent to go farther. They arrive at a state of arrested development even inside our school rooms. They clog our educational machinery, constitute a drag on our school systems as an army of repeaters, or else they leave our schools as failures and join the rank and file of idle youth, or run up and down our city streets from one trifling job to another.

Who dare in the face of these facts count the cost of a single school physician and a school nurse, and disregard the cost of ill-health, stifled ambition, inefficient and dependent lives, wrecked homes, and despondent families? The scientific physical examination of every child who enters our schools represents not expense but economy. Who dare say that the state has no right and no duty in this matter? We stand for a strict enforcement of compulsory education, and yet the law that compels school attendance of all kinds of children will be dangerous indeed if the larger assembly of pupils is not followed by closer physical supervision.

# A CLASS OF BACKWARD AND DEFECTIVE CHILDREN.

By Mary Belle Greene.

My class was organized February, 1908, in the Samuel J. Randall School, by authority of the Board of Education granted at the request of the City Superintendent, and under the direction of Mr. Charles H. Brelsford, Superintendent of District No. 3, Philadelphia, Pa.*

Two weeks after its organization sixteen children had been placed in the class, ten boys and six girls. They came from the first three grades and ranged in age from seven to thirteen years, being retarded from one to four years in school progress. The number varied through admissions and dismissals until altogether forty-one pupils had received special treatment.

Of the pupils treated in this class, eight have been returned to the grades to take up their regular school work, and twelve are now prepared to do the regular work when school opens in September. Of the eight who were promoted during the year, six were promoted to the next higher grade in June by exemption, one had to take the examination and passed, and one left school. One boy was exempt No. 1 of the class, but I consider him a bright pupil. Up to the time he was placed in the special class, he had done absolutely nothing but annoy the teacher and children in his class. After being with me about two months he decided that he would like to do his regular work, and since he has been settled in the grade his work has been very commendable. Three boys have been granted working certificates and are now making their living in an honorable way. Seven were withdrawn from school on account of death or removal from the district. This leaves eleven in the class who will need individual treatment next year, and I think it safe to say that they will always need special treatment, as eight of them are pronounced institutional cases.

The medical inspector had suitable blanks printed and thoroughly examined each child. Twenty were found with defective eyes, three with defective hearing, eleven with defective nose and throat, fourteen with defective speech; seven with orthopedic defects; eight, nervous temperament, and seven with lack of motor power. The report of the school nurse shows that seventeen of these have been treated or operated upon for defective vision or for enlarged tonsils and adenoids.

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*This class has been supported by one of Philadelphia's citizens widely known for his interest in all educational matters.

As the class increased in number, I found it difficult to give each child the amount of attention necessary, especially as the majority of them needed individual treatment. There were about ten children who impressed me as being backward children, and I believed that with special drill in some branches they would be able to return to their grade, not to do brilliant work, but probably to hold their own with the number in the grade who are rated as "fair". The remainder of the class presented a very peculiar mixture, including a deaf and dumb girl about fourteen years old, two girls who were epileptics, one boy with very defective speech, and another little girl who had had St. Vitus's Dance and was exceedingly nervous. At the suggestion of Superintendent Brelsford, we formed a morning and afternoon class, each consisting of twelve pupils.

In the morning class were placed the backward children, and my chief aim was to awaken enough interest to enable them to work up in those branches in which they were deficient. Two hours were devoted to school branches in which they needed help, and one hour to physical culture, wood-work, pyrography, or any task which served the purpose of creating an interest in life, or proved the means of awakening their dormant powers. Lack of energy is one of the most marked traits of children of this class. They have drifted into a state of lethargy and they are perfectly satisfied to sit and do nothing unless their animal instincts are aroused, then they delight in teasing and hitting other children. If once they develop the trait of wanting to do, it is not such a difficult task to turn their energies in the right direction.

In the afternoon class I was confronted with an entirely different and more difficult problem. Most of the children belonging to this class were pronounced institutional cases. Through the efforts of the principal and head nurse, applications have been placed for seven of them. In the afternoon very little regular school work was done. The most marked defects in this class are lack of concentration and motor control. Many had to be taught how to hold a pencil. We spent a great deal of time at the board making circles, curves, straight lines, etc., in order to develop a free movement of arm and hand, and to avoid the cramped position of the hand when resting on the desk. Physical culture has been a great help in overcoming these defects. I insist upon each pupil looking right into my eyes and making every motion together.

The improvement here has been a great revelation to me. At first when I counted for the movements there was lack of precision. For example, when I stood before the class and went through the movements with them, nearly all the children in the class would raise their arms after I had said one, and lower them after two, instead of making the motion upon the count. After ten months of daily drill the majority of them learned to move on the count, and I consider this a great point gained. When they first came into the class, at the moment of dismissal I would say, "Children stand," and it took fully a minute for the whole class to get on their feet. We are not good soldiers yet, but at the end of another year we may be.

Another difficulty to overcome is their inability to understand the English language. They do not know their right hand from their left, the top drawer from the bottom, under from over, in the desk from on the desk, etc., so we had daily talks about these things and each child was asked to do them so that the words would be impressed on their minds. We also had talks on cleanliness, good manners and morals, and I am very much pleased to say that they have not been without result.

Whenever I felt the time was ripe for a reading lesson or a number lesson it was given, and a great many children in this class can read a little in the primer and do simple number work. The others can recognize at least fifty words and read short sentences. In our very restless moments we work off the animal spirits by playing a game, or doing some sawing. To the visitor who goes into the class to observe, the results are not noticeable, but to the teacher who watches the repeated attempts and failures, the slightest improvement is discernible and gratifying.

The principal spent a great deal of time trying to place some of these children in institutions where they would be properly fed and cared for in every way. When the parents were consulted they refused absolutely to allow their children to go. In the majority of cases they are needed at home to help care for smaller brothers and sisters, and the parents are too ignorant to understand how much it will benefit the child. I have in mind just now the mother of the deaf and dumb girl. She is a very illiterate Italian woman, and when the principal was trying to induce her to let her daughter go to Mt. Airy, and was doing all in her power to explain how they could teach Concetta to talk and do so many useful things, the mother raised her hands, shrugged her shoulders and exclaimed: "Concetta, she born deaf, she die deaf." In her mind that settled the matter. Of the two, the parent is the greater problem. If only some way could be found of dealing with them, how much easier it would be to instil into the minds of the children good moral habits and hygienic ways of living! After the child has attended school for a few years he is far superior to his parents in a great many respects, particularly where cleanliness is concerned.

In order to show that the time and energy expended on these pupils has not been without results, I cite the following cases:

*Case 10*: Victoria D., thirteen years of age, was admitted to the class from second grade. She did not know the first grade work, but after sitting in the room for years without any apparent result, she was placed in the second grade for a change. Her teacher said she was perfectly hopeless. When I took her from the class room she seemed very much distressed and commenced crying, because she thought she was going back to the first grade. I comforted her by telling her that she was going to the third floor where all the large boys and girls were. She went into the room smiling.

When I examined her I found that the teacher was justified in saying she was hopeless. She could not read in the first reader or do the simplest number work. Her speech was very defective and she could not copy correctly the simplest words from the board. I picked out a primer that seemed attractive and tried to get her interested in it. As soon as she saw what kind of book it was, she informed me that she did not want to read in that "baby" book. She sat in her seat day after day in a perfectly listless attitude without noticing any work the class was doing. I tried to draw her attention to the board work, but she was not interested. I had a boy in the class doing third grade work, and one day I found her copying the examples he was doing, so I gave her some simple ones and she tried to do them, but without much success.

I made up my mind then and there that the best thing for this girl to do was to forget books for awhile and learn something that she could do. I asked her how she would like to learn to sew, and her face was wreathed in smiles immediately. I got some gingham and cut out an apron for her. Her progress was slow, but she was so anxious to learn that the apron was finally finished and she took it home. She wanted to sew all day and I had to use a great deal of tact to get her into the physical culture exercises, the games, and down in the yard at recess.

She had very silly spells at times. She would sit in her seat and giggle by the hour without any cause. We had a great many private talks about this habit, and it was agreed that if she saw anything funny she was to tell me, on the ground that I also liked to have a good laugh now and then. The spells came less frequent and finally were forgotten entirely. She made herself very useful around the room and loved to stay after school and help to put things in order. Her clothes were poor and she did not know how to put them on properly or how to do her hair. She came from a very poor Italian home and her surroundings were against her. Her mother was a very nice little woman, but ignorant; the father was an invalid and of very low mentality. He made from two to six dollars a week to support a family of seven. She had two younger brothers in the class, one a nervous wreck and poorly nourished and the other an habitual truant. Both were above her in mentality when under control. We had some talks about clean clothes and how the other girls arranged their hair, and to my surprise Victoria came to school the next morning with hair nicely braided and a bow of ribbon on it; before this she had it rolled up in a little knot on the back of her head, held in place with one hairpin. She gradually improved in appearance until there is now no cleaner, neater looking child in the school.

Four months ago I started some of the children in the Sunbonnet Primer and I saw that Victoria was getting very much interested in the recitations. She listened attentively to every lesson. One day she came to me and said, "I never read any more." I replied, "What would you like to read?" She said, "The Sunbonnet book." She never missed a recitation from that time until the book was finished, and then she started a first reader. She would follow me around after school with the book in her hand, and ask all the words she did not know so she could read it at home. Her speech has improved very much, and I think she will learn to read. She will never be able to go back into the grade, because she is now over fourteen years old. If she had been placed in a special class when the first grade teacher found that she was not capable of doing the work, then, in all probability, these defects could have been overcome and she would have been a fair pupil. A child who sits in a class-room for five hours a day for six or seven consecutive years without understanding and with no interest in life, naturally forms habits of idleness and inattention, which take time and patience to overcome. The special class has been of inestimable value to this girl. She loves to go to school now and begs me not to promote her as she does not want to go back in the grade.

*Case 18:* Solomon F., six years old, was transferred to my class October 2, 1908, from another school. He had been in the first grade for five months and could not learn anything at all. He was a most forlorn looking creature as he walked into the room; his clothes were shabby and he was very much in need of a bath. He had a restless, roving look and his speech was very imperfect. I insisted at his looking at me when I was talking to him, but could only hold his eye for a few seconds at a time. He appeared to be interested in everything the children were doing, and wanted to do something himself, but he lacked motor power. He could not hold a pencil or a piece of chalk. I held his hand and he made a few vertical lines on the board, but when he tried to do them alone the lines were wavy and of different lengths. Next he tried horizontal lines and finally he learned to put the two together and form a right angle. He worked so hard that the veins would swell and his face would be streaming with perspiration. At the end of the month he could cross the right angle and make the figure four. At first it meant nothing to him, but when he learned to put four pegs in the board and to make four straight lines and call them soldiers standing in a row, the idea of number came to him very quickly. Our next lesson was the figure seven, then he went a step farther and started on curves and circles. He worked a month before he could make a 6 and 9. It was at least five months before he learned to make the first ten figures. He progressed more rapidly with the mental work and was very quick in answering.

He was as helpless as a baby. He came to school with his shoe laces hanging and some other boy tied them for him. He could not catch a ball or bean bag. His playmates could do anything they wished to him and he offered no resistance. The children played ball and bean bag with him until he became quite an adept at the game, and could catch with one hand at a time. He made repeated attempts at making a raffia frame, but it ended in failure each time. At the end of two months he succeeded in finishing one and a prouder boy never walked to the office. He can now recognize about fifty words and read very short sentences; has more self-reliance, and I entertain great hopes for him in the future.

*Case 20:* Rose M., ten years old, was admitted to the class March 6, 1908. She had spent five months in the first grade, and her teacher told me that she made no progress in the work. Her appearance and clothes bore every evidence of extreme poverty. Her face showed a surly disposition. She was so dirty and her skin had become so dark from want of water that some of the children gave her the nickname of "nigger". In further study of the case I found that the home influence lent no support to the good impressions made at school. The mother was a very ignorant Italian woman who understood but little English. When spoken to about the cleanliness of her child it made no impression, for she was no cleaner than her offspring. After Rose had been with us one month, her brother Frank, twelve years old, was sent to my class from the House of Detention, where he had been held for stealing pipe from an empty house. Here was a problem in the form of a large, healthy boy, who was not deficient, but who, at the age of twelve, had never spent a day in school in his life. He did not know a letter or a figure, but was well versed in the "classics of the street." He was very trying in his obstinacy, extremely aggressive, never more delighted than when teasing and hitting other children; yet he was tractable, and when I remonstrated with him in regard to his conduct, he would often be on the verge of tears, still the impression was not lasting. His former habits and training seemed to over-balance the good. In spite of his lawlessness he seemed interested in his work at times, and soon learned to read a little in the primer, and to do number work from one to twenty. It was by no means an easy task, but required untold patience, firm treatment, and constant vigilance. He was then placed in first grade B, but being so much older than the other children, he was a source of annoyance to the teacher. He left shortly afterwards to attend a parochial school. I often meet him on the street and he is a much cleaner, brighter, happier looking boy than formerly, and I feel that all my efforts to change and mould his character have not been in vain.

Rose was a different type of child, lazy, indifferent, the "don't care" type. She was inclined to pout about trifles, and to be very disagreeable with her playmates. I had to draw the work out of her. After the summer vacation she seemed to have lost all she had learned the three months she spent in the grade. She spent the summer in the country picking berries. She learned to sew, and that seemed to interest her more than anything else; then she persuaded her mother to make her some new dresses, and she grew to be very neat. She became interested in her studies, and learned to read and write nicely. When the February promotions were made she was delighted at being placed in first grade B. At the end of three months her teacher commended her work and said she was a promising pupil for second grade work, to which grade she was exempt in June, 1909. During the year she had an operation for enlarged tonsils and seemed much better afterwards.

*Case 25:* Louie D., at the age of seven years was sent to me from first grade. His teacher had worked with him for five months without any results. If a stranger entered the class-room, Louie would immediately jump out of his seat, run to the corner of the room and scream as loud as possible. He did the same thing several times after he came into the class and he seemed more frightened at a colored person. My class always used the fire escape for fire drill and the first time he seemed unusually scared, held back and screamed. I took him by the hand and led him down. He went very reluctantly, but had no fear of it again. I tried the same plan with him when people came into the room. At first I had them talk to him, but it only increased his fear. After that I ignored him completely and I found it worked better. He would scream for a few seconds and when he found no one was noticing him, he would slip into his seat and commence work. He gradually improved until he reached the stage where he would show his work to strangers. He did not understand English at all, and very few words in Italian. He never talked to any one. He was active and played with the children, but appeared to have no vocabulary. Being the smallest child in the class, he received a great deal of attention from the other members of the class, and they called him "baby". The first words he learned to recognize were "mamma" and "baby". A few days after a little girl much smaller than he was admitted to the class. He scrutinized her closely, then he walked to her, took her by the hand, led her to me, and said "baby!" He passed the honor along very gracefully and gave the little girl all the attentions that he had received from his playmates.

Louie soon came out of his dormant state, learned to talk nicely, and became an interested, energetic little fellow. As soon as he could read and write a little, and showed a decided inclination to learn, I placed him in the first grade A. In June he was exempt to the first grade B. He has never shown any fear of any one or anything since he left the class.

*Case 9:* Mary S., a little Italian girl, nine years old, was admitted to the class from first grade. She had spent thirty-six months in grade, and being an institutional case, could not learn much with average children. She was epileptic, also immoral. She was absent from school a week at a time on account of injuries received from falls during epileptic seizures. Mary was almost as helpless as an infant, could not recognize words or figures and had very defective speech. The first step in training this child was to teach her self-reliance. Each morning she walked into the room and stood in the middle of the floor with hat and coat on, until some one took them off and hung them up for her. I tried to teach her to hang them up in the closet as she came in and after a month's training she could do it. She never played with the other children at recess; was very destructive in the room, tearing books and chewing points off pencils. She was more destructive than usual after an epileptic fit. One day I noticed her trying to jump rope with the other children. She soon became very active, played ball, ran and jumped, and was delighted to play a kindergarten game. For months she stood in the class with the other children when they were learning words and numbers and yet showed no signs of knowing what we were talking about. She never said a word and very seldom looked at the book or board. One day I asked for a story about a bird and she raised her hand and said, "A bird can fly." For weeks we talked about familiar objects and then she began to recognize some written words. Now she recognizes about fifty words, can read short sentences and make a few numbers. Mary is a child who will never be fit for a grade, but even an epileptic can be taught, and I do not know of any child whom the class has benefited more than it has Mary. Her application is in at an institution and she will be placed there as soon as there is a vacancy. When she has a severe spell she forgets everything she has learned for a period of a few days. If the class has done nothing else it has at least changed her from a helpless child into a self-reliant one who is now capable to some extent of taking care of herself.

If time and space permitted I could write up about thirty more cases, all with some marked defect which has made them outcasts from their respective grades. The special class has been a blessing to all, and with the exception of two, all have been wonderfully improved. Surely more ought to be done for these deficient children. It is not just to the average child to allow the grade teacher to take time to teach them, and it is very unjust to the deficient child to place it under restrictions in a class-room. The one great thing needed for these children is frequent change of work, and here lies the great problem for the teacher. The question of discipline is solved to a great extent if they can be kept busy and interested.

In closing let me make an urgent plea for more of these classes, with sufficient supplies, and trained teachers.

# THE PHYSICAL CONDITION OF THE SCHOOL CHILDREN OF THE SCHOOL OF OBSERVATION, UNIVERSITY OF PENNSYLVANIA.

By Walter S. Cornell, M.D.,
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The Department of Pedagogy of the University of Pennsylvania conducted during the summer of 1909 a School of Observation for teachers, comprising seven graded classes containing a hundred and fifty-six pupils. These children attended the school usually for the purpose of qualifying for the grade higher than that occupied in June at the closing of the public school. Some of them had failed of promotion on account of absence due to sickness, others had failed apparently from inability to do the regular work in the prescribed time. Others were precocious children desirous of advancing an extra grade during the summer season. As a whole they presented an appearance equal to and possibly slightly above the average school child.

The physical condition of these children, when the results of the examination were summarized, proved to be about the same as that of public school children generally, except that the cases of poor nutrition and skin disease found so frequently associated with poverty and squalor, were absent. The percentage of children showing physical defects and receiving parents' notices was 62.2 per cent of the whole number. Of these, however, 25.7 per cent received notices for decayed teeth only, so that the percentage of defectives, disregarding decayed teeth, was 36.5 per cent. The principal defects found were eye strain, enlarged tonsils, nasal obstruction, defective hearing, poor nutrition, and decayed teeth. They are given in the following table:

| | |
|---|---|
| Total number of children examined | 156 |
| Children receiving parents' notices for physical defects | 97 |
| " regarded as physically normal | 59 |

| Defects | Number of Cases | Percentage of all Children |
|---|---|---|
| Eye Strain | 32 | 20.5 |
| Enlarged Tonsils | 8 | 5.1 |
| Nasal Obstruction | 21 | 13.5 |
| Defective Hearing (marked 3) | 8 | 5.1 |
| Poor Nutrition | 7 | 4.5 |
| Decayed Teeth | 60 | 38.5 |
| Nervous Exhaustion | 3 | 2. |
| Stoop Shoulders | 3 | 2. |
| Spinal Curvature | 1 | |
| Weak Heart | 1 | |
| Infantile Spinal Paralysis | 1 | |

The eye strain cases were subdivided as follows: Normal vision, with headache and eye tire, 14; three-fourths vision, 12; two-thirds vision, 3; one-half vision, 3; one-third vision, 1. The number of children already wearing eye-glasses was twelve. The total number of children with defective vision was thus forty-four, or 28 per cent.

The proportion of children with decayed teeth was 38.5 per cent, the proportion being much greater in the lower grades owing to the decay of the temporary teeth. This is shown in the following table:—

| Grade | Percentage with Decayed Teeth |
|---|---|
| 8 | 25. |
| 7 | 24. |
| 6 | 34.5 |
| 5 | 54.5 |
| 4 | 52.4 |
| 3 | 53.8 |
| 2 | 50. |

The following table shows the number of normal and physically defective children in each grade, the total number of defects found, and gives a thoroughly intelligible idea of the number of defects found in each grade after the subtraction of the large number of cases of decayed teeth which comprise sixty of the one hundred and forty-five defects found.

| Grade | Total number of Children. | Normal Children. | DEFECTIVE CHILDREN. | | | | Total number of defects |
|---|---|---|---|---|---|---|---|
| | | | NUMBER OF CHILDREN POSSESSING | | | | |
| | | | Physical defects other than decayed teeth | Decayed teeth and other defects | Decayed teeth only | Total | |
| 8 | 32 | 14 | 10 | 3 | 5 | 18 | 32 |
| 7 | 29 | 18 | 4 | 1 | 6 | 11 | 13 |
| 6 | 29 | 12 | 7 | 4 | 6 | 17 | 24 |
| 5 | 22 | 5 | 5 | 2 | 10 | 17 | 25 |
| 4 | 21 | 3 | 7 | 6 | 5 | 18 | 30 |
| 3 | 13 | 3 | 3 | 3 | 4 | 10 | 14 |
| 2 | 10 | 4 | 1 | 1 | 4 | 6 | 7 |
| Total | 156 | 59 | 37 | 20 | 40 | 97 | 145 |
| Percentage | | 37.8 | 23.7 | 12.8 | 25.7 | 62.2 | |
| | | | 36.5 | | | | |
| | | | | 38.5 | | | |

# PROGRESS AND RETARDATION OF A BALTIMORE CLASS.

By Charles A. A. J. Miller, M.D.,
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Much has been written and more has been said about retardation in the public schools throughout the country. Many deductions have been made, many conclusions drawn that do injustice to schools in general, and to certain school systems in particular. The old adage, "Comparisons are odious," has much truth in it when applied to measurements of the merits and demerits of school systems. When men like Professor Thorndike, Mr. Ayres, Superintendent Greenwood, and Dr. Cornman make comparisons, the educational world is stirred to words, more often than to deeds. In consequence of such agitation the public is aroused, is led to think that the money appropriated for education is uselessly spent or at least badly invested, that there should be radical changes in the system, because it appears that only certain children, generally the sons and daughters of the well-to-do, are getting the full benefits of public education. We do not wish to undervalue the work that has been done by men of high purposes and great abilities like Professor Thorndike and others. We wish to point out that the data from which they have drawn inferences are very unlike, and that all their carefully estimated allowances for errors and omissions in necessarily imperfect records cannot make the results of their researches absolutely correct and reliable. Indeed in fairness to these men it must be said that they do not claim perfect, but only approximate results.

If for instance the schools of Baltimore, a seaport, are to be compared with those of Columbus, Ohio, an inland capital city attracting to itself thousands of the best citizens of a dozen or more smaller Ohio cities and towns, we must take into consideration the kind of American population attending the respective schools, the almost complete absence of private schools in the latter city and the abundance of them in the former, the proportion of foreign elements, the great number of illiterate colored people in the former as against a much smaller number more intelligent in the latter, the compulsory attendance law and its enforcement, and finally the opportunities and requirements for promotion in the two cities. Even when all these factors are duly considered, it will be admitted that the school statistics furnished are very incomplete, and deductions made from them can only indicate that time, energy and opportunities for good are being wasted, and that there is room for improvements and reforms. Until more attention is paid to accurate statistics, and more money is spent to collect them, educators will continue to infer, sometimes correctly, sometimes incorrectly, but always approximately.

I have been fortunate to have in one of my schools the record of a class of forty-eight pupils. Before presenting the results of my study, I wish to say that all the statements that will be made have been verified. In September, 1901, there were in the first grade of this school four classes, containing 182 pupils, of whom about seventy (30.5 per cent) were repeaters. The rolls of three classes were lost or destroyed; those of one class were saved. According to this record, verified by the school register kept by the principal, this class had forty-eight pupils, of whom five were repeaters, the very weakest of the previous year's beginners. These five obviously belong to the year 1900, and cannot form part of the basis upon which to reckon percentages in our investigation. It is nevertheless interesting to know what has become of these five, retarded one whole year, because at that time there was but one opportunity for promotion, at the end of the scholastic year in June. Of the five, one girl died while attending the second grade; one left the fourth grade in May, 1906, on account of the protracted illness of her father; one boy was transferred to another school and left the fourth grade there to go to work in his father's blacksmith shop and to attend night school; another boy left the fifth grade in 1906, worked for a while, and lost his life by drowning.

I shall now take up the forty-three pupils of 1901. Inquiries made as to the occupations of the parents show that four are tailors, of whom two have shops; one is a druggist; two have barber shops; three are bakers; two are plumbers; three are cabinet makers; one is a musician; three are widows; five are machinists; one is a tuner, one a carver; five are saloon keepers; one is an electrician, one a shoe cutter, one a traveling salesman, one a buyer, one a junk dealer; three have grocery stores; one is a carriage maker, and one a painter. Thirteen fathers were born in this country, thirty in Germany; of the thirteen, ten are of German descent.

During the period of almost eight years, twenty children changed residences once, four changed twice; nine of the twenty-four did not change school on account of removal, and fifteen got transfers to other schools, three being transferred twice. We find therefore that 56 per cent changed residences, and that such changes caused 35 per cent to be transferred to other schools. It is easy to see that retardation would result. Two children were registered as living one square from school, ten two squares, five three, one four, two five, three six, five seven, six eight, two ten, one eleven, one twelve, one thirteen, and four fourteen squares. Ten who lived from one to three squares away, moved and were transferred to other schools; the five other transferred children lived more than five squares from school. This record of distances shows that the school is not supplied from the immediate neighborhood, which has been encroached upon by business and boarding houses, by colored people, and by Italians, Lithuanians, and Russians. Of the forty-three pupils two were five years of age, thirty-one were six, nine were seven, and one was eight years old. Both the five year olds subsequently lost a year, and one left school after reaching the fourth grade. Seventy-two per cent were six years old, the other 28 per cent including the five, seven, and eight year olds.

Of the forty-three pupils, twenty-eight were boys, and fifteen girls. One girl is now a half year ahead of time in her course, and in addition made one year on her high school course. Seven children, four girls and three boys, are in the eighth grade A, and two of them may make one year in the high school. Three, one girl and two boys, are in eighth grade B. Seven, five boys and two girls, are in seventh grade A, and three boys are in seventh B. One girl and one boy are in sixth grade A; two boys and one girl are in sixth B. Two boys are in fifth A. Five children, four boys and one girl, are in fourth A. One girl died while in the second grade. Eight children (18.6 per cent) left school to go to work, and one left the city for West Virginia. Thirty-three (76.7 per cent) are attending school; one of these is in a private school, and one in a county school.

Of the forty-three pupils, therefore, if we include the one girl in the high school as being "on time," we have ten children (23 per cent) on time and thirty-three (77 per cent) retarded. Of the number on time, eight are in school, one left the eighth grade in October, 1908, and one left the sixth grade B, having gained one-half year. Of the retarded pupils, twenty-five are still in school, and of these

3 lost ½ year
7 " 1 "
3 " 1½ years
2 " 2 "

3 lost 2½ years
2 " 3 "
5 " 4 "

Eight have gone to work, left the state, or died, and of these

1 lost 1 year in 2 years of school
1 " 1 " " 3 " " "
1 " 1 " " 3 " " "
1 " 2½ years " 7 " " "
1 " 1 year " 6½ " " "
1 " 2 years " 7 " " "
2 " 3 " " 7 " " "

Eleven of the twenty-five retarded pupils still in school are among the transferred, a significant fact.

Looking into other causes of retardation besides removal and change of schools, we discover the following facts. Two children lost a year on account of sickness. Some would have lost a half year less, if earlier in their course they had had semi-annual opportunities for promotion, as is shown by the fact that six children were prevented from losing a half year more, by the half-yearly promotions in the latter part of their course.

Of the twelve children who lost from two to four years in their course, we know that the loss was due to sickness or physical disability in two cases; to very irregular and interrupted attendance in two cases; to removal to the country and subsequent return to the city in one case; to total lack of application (due to lack of home discipline caused by death of father and remarriage of mother) in one case; and to "natural stupidity" in six cases. Another cause for retardation is to be found in some instances where English is not the mother tongue.

Of the eight at work, two had to leave on account of separation in the family; one to help in a restaurant; one, employed as a bundle boy, to help support the family, the head of which was out of work for two years; one, a shuttle boy, had to give up school because his father died; one girl left in the eighth grade to take a position in a store, because her father was out of work a very long time; one left the seventh grade to attend catechetical instruction, and to assist her mother at home.

Three months after these forty-three children had entered school, they were rated, in respect to their mental capacity, as 1, 2, or 3. Only those who were marked 1 are now in the eighth grade, A or B. In the seventh grade A we find four 1's and two 2's; all in the seventh B are 2's. Those who were marked 3, if in school at all, are in the lower grades. Only two of the original 1's are in the sixth grade. This indicates that mental slowness is certainly detected in the lowest grade; slow pupils do not make up their deficiencies in the higher grades; and few good pupils retrograde as they move up.

Inquiring into the future plans of these children of the original class now in the eighth grade B, seventh A, and seventh B, I find that it is almost certain these will finish the elementary course; two in the sixth A will probably stay to finish the eight years' work. If these numbers are added to the number now in the high school and the eighth grade A, we have twenty-three (53.5 per cent) who will probably get the full benefit of the elementary course. If we regard this as slightly too high a figure, and cut it down to 50 per cent, we have left 50 per cent who do not reach the secondary school, of which number 21 per cent get as far as the sixth grade or higher, and 27 per cent leave school below the sixth grade. Of this number one child died and none left below the fourth grade. In my opinion this is a good record.

The figures and percentages plainly show:

1. The more frequent the opportunities for promotion, the less time will be lost by the retarded pupils.

2. Permanency of residence and consequent continuous attendance in the same school increase the chances for promotion.

3. Parents in average circumstances aim to give their children eight years of schooling, unless death or other untoward causes interfere.

4. From 20 to 30 per cent of the children do not reach the sixth grade.

5. Those who do not reach the sixth grade, and those who have to leave before the completion of the eighth grade, ought to have an opportunity to get some training for the industries which they will very probably enter.

In this investigation we had to deal with a school attended almost exclusively by children of German extraction, whose parents on the whole are far from being in easy or even comfortable circumstances. We believe that if a similar study were made in a better neighborhood, a better showing would be recorded, and it would be found that as many as 70 per cent get the benefits of the entire elementary course, 40 per cent of that number being on time.

# REVIEWS AND CRITICISM.

*The Psychology of Dementia Praecox.* By Dr. C. G. Jung. Translated by Frederick Peterson, M.D., and A. A. Brill, Ph.B., M.D. Nervous and Mental Disease Monograph Series, No. 3, New York, 1909. Pp. xx + 153.

The majority of existing treatises on dementia præcox present, in reality, little more than collections of accurate clinical pictures of the disease. Their aim is to establish a clearer and more definite conception of the limits of the psychosis, and thus to define the boundaries, often most obscure, which separate it from other disease entities.

This study of Dr. Jung, however, stands quite apart in both aim and method. Its aim is to reach by analysis an understanding of the underlying causes of the diverse symptoms, and its method is one of individual experimental psychology. A similar study of hysteria has been made by Breuer and Freud, and an analysis of dreams and paranoia by Freud. The explanation which they offer of the phenomena of hysteria, dreams, and paranoia, is claimed by Dr. Jung to be equally applicable to all of the varied phenomena manifested in dementia præcox. The first chapter presents a résumé of the literature, tracing especially the development of the psychological concept of the psychosis, through the various theories which attribute the condition to impaired powers of attention, to the dissociation theory of Gross, Freud, and the later investigators. Gross was the first to lay stress upon the fact that the consciousness of the patient with dementia præcox suffers a disintegration. Certain groups of ideas, he holds, are split off from the general consciousness and remain active, though isolated and often subconscious. They, however, rise into consciousness when for any reason the main trend of thought is weakened. This conception is carried further by Freud, who considers that the split-off ideas always center around some thought which the subject desires to express. Such thoughts, voluntarily shut out from consciousness, still retain considerable force by virtue of their strong emotional tone, and persist as subconscious, autonomous complexes, at times rising to the threshold of consciousness and interrupting the train of thought by hallucinations, strange fancies, etc. The explanation offered by Jung is identical. He considers feeling the basis of personality, while thought and action are secondary phenomena.

The fact that such complexes are always liable to recall has enabled Jung to make some minute analyses by the aid of the association reaction method. If a stimulus word is not associated with any repressed emotional complex, the response comes readily and is remembered when the test is repeated. If, on the other hand, it is so associated, the aroused complex interrupts the easy play of thought, the response comes slowly and is soon forgotten. Active thought processes are clouded and impeded in proportion to the activity of the autonomous complexes. The next step in the analysis is to pick out the unusual reactions and question the subject as to what other thoughts they arouse. In this way both Freud and Jung have been able to trace the genesis of emotional complexes, the very existence of which was unknown to the subject. Jung agrees with Freud that these split-off complexes are always purposely repressed in the beginning because unpleasant to the individual. Such complexes often manifest themselves symbolically by neologisms, irrelevant melodies, and puns. They are also indicated by an unusually large number of contrast associations. In active thought the awakened contrasts are not powerful enough to impede its course, but when the energy of such thought is drained by the presence of autonomous complexes, it is no longer strong enough to inhibit the contrasts, and a state of indecision results, which reveals itself in contrast associations.

On the strength of the theory outlined above, supported by the evidence of association experiments, Dr. Jung draws a most interesting parallel between hysteria and dementia præcox.

The parallel is traced through the following symptom groups: disturbances of the emotions, characteristic abnormalities, intellectual disturbances, and stereotypy. Under emotional disturbances he treats of (1) the apparent absence of emotional response when topics well calculated to produce it are introduced; (2) the seemingly causeless emotional outburst and dominant mood; (3) the lack of emotional control; (4) the lack of affective *rapport*. All these symptoms are found in both psychoses. The first two he relates closely as follows: in hysteria the emotional outburst can usually be traced to some experience which at the time of its occurrence had failed to arouse its appropriate emotional tone; in dementia præcox, though it is more difficult and often impossible to trace such a connection, we have no reason to suppose that it does not exist. In both cases the condition is considered as a postponed emotional reaction.

The lack of emotional control is explained in all cases by the presence of powerful autonomous complexes which are beyond the control of the ego-complex, *i. e.* by a disturbance of the ego-synthesis.

The lack of affective rapport is a permanent symptom in dementia præcox, and a transient one in hysteria. In both diseases the condition is ascribed to the distraction caused by autonomous complexes, which complexes are so firmly established in dementia præcox that the ego-complex never gains control. The patients feel themselves in a different world from those around them. The abnormalities of character discussed are affectations of manner and speech, silly behavior, and egotism, all symptoms common to both diseases.

Affectation and egotism in hystericals are often the result of an intense sensitiveness, while silly behavior is a definite reaction against an unpleasant complex. The affectation of the dementia præcox patients arises from delusions of grandeur, and expresses itself in speech as neologisms and in writing as flourishes. Their egotism is the result of the dominating autonomous complexes, and their silliness a means of repression.

The intellectual disturbances are classified as follows:

1. Clouding of consciousness
    - Momentary
        - Hysteria
            - Hallucinations
            - Ecstatics
            - Torpor
        - Dementia præcox
            - Hallucinations
            - Impulsive acts
            - Thought deprivation
    - Persistent
        - Hysteria
            - Somnambulism
            - Lethargy
            - Catalepsy
        - Dementia præcox
            - Hallucinatory states
            - Confusion
            - Stupor
2. Disturbances of attention.
3. Delusions and hallucinations.
4. Obsessions.
5. Abnormalities of feeling
    - Feeling of automatism
    - Feeling of domination
    - Feeling of incomplete perception
    - Feeling of insufficient emotion

The weakening of the ego-synthesis due to the presence of autonomous complexes results in a permanent state of suggestibility. This condition is, however, subject to sudden more or less violent interruptions by eruptions into consciousness of the submerged complexes which come in the form of any of the symptoms enumerated above under "clouding of consciousness."

The disturbance of attention in both psychoses is identical. It consists of a preoccupation which prevents any real concentration. The autonomous complexes paralyze all the psychic activities.

Many delusions of dementia præcox and obsessions of hystericals are attributed to the persistence of the affective tone of a suppressed complex. To explain this seemingly causeless feeling, the patients turn to quite unrelated phenomena. Others are the indirect results of the complexes, whose presence inhibits the full development of all other perceptions. Such are the feelings of unreality of the self and the external world, and the other abnormalities of feeling enumerated above.

Akin to these manifestations in hysteria and dementia præcox are those dream states in which reality and fancy are hopelessly interwoven. Dr. Jung says, "Let the dreamer walk about and act like one awakened, and we have the clinical picture of dementia præcox." Hallucinations are very common in dreams, and are composed of symbolically changed fragments of some autonomous complex. The same explanation holds true for the hallucinations of hysteria and dementia præcox.

Finally, the phenomena of stereotypy are traced to the complex either directly, as when habitual phrases are associated with it symbolically or otherwise, or indirectly, when the complex has become so dominant as virtually to absorb all the brain activity and leave the patient a mere reflex machine. In spite of this close parallel between the symptoms of hysteria and dementia præcox, Dr. Jung is able to make a clear differentiation between the two psychoses. The symptoms of both are explained by the presence of emotional complexes. In hysteria these complexes are held to be the primary cause of the disease, and they may yield in time to the ego-complex. In dementia there is in addition to the complex some anomalous metabolism, possibly caused by a toxine which is developed either as the result of the complex or simultaneously with it, which injures the brain in a more or less irreparable manner. One is explained on purely psychic grounds, the other has an additional physiological element.

Dr. Jung has in this analysis succeeded in offering an explanation of nearly all mental anomalies. Emotional and volitional disturbances, hallucinations, delusions of various kinds, including the feelings of unreality, obsessions, neologisms, catalepsy, and suggestion are all explained by the one hypothesis of split-off association complexes. This is a wonderful synthesis of a multitude of diverse phenomena which most of us have been accustomed to look upon from quite distinct points of view. Further study alone will prove whether it is the true interpretation.

This general analysis is followed in the last chapter by a complete analysis of a case of paranoid dementia. The basis for this study is a list of association reactions. The reactions with the time are given, and followed by the more detailed associations obtained by using the characteristic associations as stimuli for continuous associations. The long and otherwise peculiar reactions were very frequent, showing that autonomous complexes usurped a large part of mental activity. Three principal complexes stand out in the analysis; the theme of the most dominant is *personal grandeur,* of the next in importance *persecution,* while the third is *erotic.* The first complex is interpreted as being a realization in fancy of the unfulfilled hopes of a lifetime; it produced many neologisms, called by the patient "power-words". The persecutory complex also produced grotesque reactions. The third complex was considerably concealed. The analysis is most minute, and abounds in examples of symbolic imagery and condensation of ideas, which are interestingly interpreted, though not always convincingly.

Practically all investigators recognize in dementia præcox a reduction in the power to direct the thought, and the consequent usurping of consciousness by autonomous thought. These facts are undoubtedly sustained by the actual results of the association experiments. That this autonomous thought can be resolved into repressed complexes and these explained on some emotional basis is, however, not so clear. Dr. Jung holds that these analyses are also supported by the association experiments. The data here, however, are only complete when the key is supplied by the subtle mind of the experimenter, and therefore a large personal equation cannot fail to enter into the results. Some of Freud's analyses of symbolic expressions (many wonderful ones are given in his "*Psychopathologie des Alltagslebens*") seem to me, like several of Dr. Jung's, rather strained and certainly not sufficient proof on which to establish such a far reaching theory.

CLARA HARRISON TOWN.

## NEWS AND COMMENT.

### *Summer Playgrounds in Philadelphia.*

Mr. W. A. Stecher, Director of Physical Education, and one of the staunchest friends of public playgrounds, has presented to the Philadelphia Board of Education the following interesting report of playground activities during the summer of 1909:—

"Sixty playgrounds were opened on July 1st. On account of insufficient attendance, two of these were closed during August.

"In all grounds, a record was kept of the number of children attending mornings, as well as afternoons. During previous years, it has been customary to add the morning and the afternoon attendance and take this sum as the total number of children who visited the playgrounds. Figured in this manner, the total number of visits to the playgrounds of the Board was 950,051.

"In most cases, however, the same children visit the playgrounds both morning and afternoon. The total secured in the above manner should not, therefore, be taken in arriving at the cost per child for the playground season. This has, this year, been secured by adding 20 per cent to the greatest number visiting each playground in either the morning or the afternoon session. In this report, the cost per child has been figured on this basis, *i. e.* during fifty-two days a grand total of 617,248 children.

"For the first time this year, we took a regular census report of all children who visited the playgrounds. This report gives us the name, age and sex of the child, nationality, grade in school and how far it lives from the playground, if it is a regular attendant and lastly, if it has charge of any smaller children.

"On these census sheets we have the names of 45,325 children, 21,726 boys and 23,599 girls; 35,147 of these (80 per cent), were regular attendants, the balance attending irregularly.

"The average daily attendance in all playgrounds was 11,870 children, who during the two months made a grand total of 950,051 visits to the grounds.

"The cost for salaries was $19,810.35 and for supplies $5600.00, making a total cost of $25,410.35.

"The cost per child per day of nine hours was 4 1-9 cents, and the cost per child for the whole season, July and August, was $2.14.

"The total attendance in the largest playground (Waterview) was 26,723, with an average daily attendance of 514 children, while the smallest playground (Keystone) had a total of 2967, with a daily average of 56 children.

"Looking up the radius of efficiency of school playgrounds, we find that 11 per cent of children live within one-half square of the grounds;

31 per cent come 1 square; 24 per cent come 2 squares;
15 " " 3 " 9 " " 4 "
5 " " 5 " 2 " " 6 "
2 " " 7 " 1 " " 8 " and over.

This shows that, so far as our school playgrounds are concerned, the majority of children, 66 per cent, do not come from a greater distance than two squares, and that 90 per cent live within four squares of the playgrounds.

"Coming now to the ages of visitors, we find that 15 per cent are under three years of age,

3 per cent are 3 years old; 3 per cent are 4 years old;
5 " " 5 " " 7 " " 6 " "
8 " " 7 " " 9 " " 8 " "
10 " " 9 " " 10 " " 10 " "
9 " " 11 " " 9 " " 12 " "
6 " " 13 " " 1 " " 14 " "

while 2 per cent are over fourteen years. These figures show that 33 per cent of the children in our playgrounds are six years or under; that 98 per cent are fourteen years and under, while only 2 per cent are over fourteeen years of age. This knowledge is a great help in preparing our future playground teachers, and also in ordering our equipment.

"When we come to the question of nationality, we find that 28,753 children (of whom 1652 were negroes)—are reported as Americans. This is 63 per cent of the total. Next we have 4244 children, (about 1 per cent), classed as Hebrews, although no nationality is given. Then come 3289 Russians, 2545 Italians, 2440 Germans, 2404 Irish, 527 English, 411 Poles, and so on through twenty-eight nationalities, down to 2 Chinese, 1 Greek and 1 Cuban.

"These are interesting figures, but it would not be correct to assume that the proportions would be the same were the Board to establish more playgrounds in other parts of the city.

"The census brings forward another interesting fact, and that is that 12,063 very young children are often brought into the playgrounds by 'young mothers' (and fathers) where they are kept while the mothers are working to support the family.

"Reporting on the work as a whole, I can say that through the greater stability given to the playgrounds by appointing a principal, who had full control of each ground, much of the friction of former years has disappeared and the results, therefore, have been more gratifying."

Respectfully,

W. A. Stecher,

*Director of Physical Education.*

*The St. Paul Institute of Arts and Sciences.*

"Not a machine by which a few men can do something for the people of St. Paul, but an instrumentality by which all the people of St. Paul may do what they will for themselves and each other," such is the Institute of Arts and Sciences. The First Year-Book, which has just been distributed, contains two hundred and twenty-five pages of solid food for thought, including a history and general description of the institute, the programme carried out in 1908-09, and descriptions of the several departments and sections. Before the organization of the present institute, most of these departments were working as independent clubs and societies, and to a large extent they still preserve their original form and method. They arrange their own programmes, conduct field trips and public exhibitions, and give courses of lectures both general and technical. These societies cover almost every field of popular interest in art, science, and industry, from symphony concerts and art exhibitions, German and French literature, through flower shows, cookery classes, a camera club and an ornithological club, to evening high schools, not overlooking a course on railroad freight rates.

All these things of course have been done before, time after time, in other parts of the world, but never in just this way, "not by a few men for the people, but all the people doing what they will for themselves and each other." The citizens of St. Paul have had the genius to create for themselves, upon the basis of organizations already useful, a great social institution. And they have not moved rashly in their undertaking. For two years the experiment was made on a smaller scale, as the Institute of Science and Letters, with encouraging success.

Mr. Charles W. Ames, President of the Institute, in his letter presenting the year-book to the board of trustees, says, "St. Paul has now a city-wide organization, so comprehensive, and so democratic, so adaptable to every public demand, that it may open the door of educational opportunity to every citizen and resident according to the individual need and desire." In his eloquent address delivered at the meeting of organization in May, 1908, and reprinted in this year-book, he says, "It is for our children, and their children, and their children's children, and their descendants: that they may be content to stay here and enjoy the benefits which we have helped to provide for them, and to increase those benefits continually, and pass them on to the other generations yet to follow. . . . We shall eat our cake and have it. We shall get the worth of our money as we spend it, and future generations will draw interest from it."

### *A Clinical Psychologist for a State School for Feebleminded.*

Edmund B. Huey, Ph.D., formerly professor of psychology and pedagogy in the Western University of Pennsylvania, Pittsburgh, has been appointed clinical psychologist to the State School and Colony for the Feebleminded at Lincoln, Illinois.

# The Psychological Clinic

VOL. III. No. 6. NOVEMBER 15, 1909.

# THE PREVALENCE OF VISUAL AND AURAL DEFECTS AMONG THE PUBLIC SCHOOL CHILDREN OF ST. LOUIS COUNTY, MO.

BY ALBERT E. TAUSSIG, M.D.

*St. Louis, Mo.*

The following investigation, the funds for which were generously supplied by Mr. B. Greensfelder of Clayton, Mo., was undertaken under the auspices of the St. Louis School of Philanthropy, at the suggestion of its director, Prof. Thomas J. Riley. The measurements were made by Drs. J. G. Calhoun and C. A. Vosburgh of St. Louis, under the general direction of the writer.

The prevalence of physical defects among city children has been thoroughly investigated at many places both in this country and abroad and there can be no longer any difference of opinion as to the necessity for thorough medical inspection in city schools.

Much less is known as to the prevalence of such defects among the school children in suburban and rural communities, and yet such information is indispensable to enable the state authorities to form a just opinion as to the advisability of inaugurating a state-wide medical inspection of all school children.

It seemed worth while to undertake such a study of the school children of St. Louis County for the purpose of adding to our knowledge in this matter. The present investigation was limited to the prevalence of impaired vision, defective hearing and well marked adenoids. Some two thousand children were examined in the public schools of Wellston, Clayton, Webster and Tuxedo, suburban communities in the neighborhood of St. Louis.

The eyes were tested by means of Snellen's charts hung in a good light at a distance of twenty feet, each eye being tested separately. Such an examination, however, fails to reveal the presence of hyperopia, a frequent cause of eye-strain in younger children, and our figures for impaired vision among the youngest children are therefore probably somewhat too low. It seemed best to omit the tests for hyperopia not only on account of the added labor involved, but also to facilitate a comparison of our results with those obtained elsewhere by examinations limited to the use of Snellen's charts.

The hearing was tested by means of a standard whisper, audible to normal ears at a distance of fifteen to twenty feet, each ear again being tested separately. Adenoids were recorded as present only where they clearly interfered with nasal respiration and thus represented an actual handicap to the child. Records were kept on cards arranged as follows:

| | | | |
|---|---|---|---|
| Age at Nearest Birthday | Name ........................ | G. | Q.[1] |

| | |
|---|---|
| Left Eye v = 20/ | Right Ear, Whisper Heard Ft. |
| Right Eye v. = 20/ | Left Ear, Whisper Heard Ft. |
| Spectacles? Yes. No. | Adenoids? Yes. No. |

Date School

Examiner

1. *The Total Percentage of Visual and Aural Defects.*

Of the two thousand children examined some 30.6 per cent had vision that was below normal in one or both eyes. In about half of these children, however, this defect was not sufficiently grave to signify a real handicap. A little over 14 per cent had vision that was less than two-thirds of the normal in both eyes. This is a serious defect and such eyes urgently demand proper glasses. The extreme cases of visual impairment were rather rare, the children with vision less than half the normal in both eyes being a little less than 3 per cent of the total number examined. These findings about correspond to the observations made elsewhere, as illustrated by the following table:

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[1] G. Q. stand for Grade and Quarter.

VISUAL DEFECTS IN PUBLIC SCHOOLS.

| | Per Cent |
|---|---|
| Heidelberg, Germany (1870)[2] | 35 |
| Edinburgh, Scotland (1904)[3] | 43.2 |
| Dunfermline, Scotland (1907)[3] | 17 |
| Cleveland, well-to-do district (1907)[3] | 32.4 |
| Cleveland, congested district (1907)[3] | 71.7 |
| Massachusetts, except Boston and environment (1907)[3] | 19.9 |
| Boston and environment (1907)[3] | 30.7 |
| Boston (1908)[4] | 23 |
| New York City (1906)[3] | 31.3 |
| New York City, Borough of Manhattan (1908)[5] | 10.2 |
| Chicago (1909)[6] | 19.4 |
| Jefferson City, Mo., either eye (1908)[7] | 36.5 |
| Jefferson City, Mo., both eyes (1908)[7] | 22.7 |
| St. Louis County, Mo., either eye less than 20/20 (1909) | 30.6 |
| St. Louis County, Mo., both eyes less than 20/30 (1909) | 14.3 |
| St. Louis County, Mo., both eyes less than 20/40 (1909) | 2.8 |

All of these figures are probably a little too small, since they do not include cases of hyperopia or of moderate degrees of astigmatism. Their most striking feature is their lack of uniformity. For this several factors are probably responsible. In the first place, there is no agreement as to what constitutes defective vision. In some cities everything less than perfect vision for each eye is reported as defective. Elsewhere vision by both eyes must be less than perfect or must even be less than 20/30. The last would seem a rational criterion since it alone involves a real handicap. It would seem, too, that in congested districts visual defects are more prevalent than elsewhere, as is shown by a comparison of the figures for Edinburgh and Dunfermline, between the two portions of Cleveland and between Boston and the rest of Massachusetts. Finally the drop in the percentage of visual defects in Boston between 1907 and 1908 and in New York City between 1906 and 1908 may, at least in part, be due to the beneficial effect of systematic school inspection.

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[2] A. Colsman, Die überhandnehmende Kurzsichtigkeit unter der deutschen Jugend, etc., p. 10. Barmen, 1877.

[3] L. H. Gulick and L. P. Ayres, Medical Inspection of Schools, p. 83. New York, 1908.

[4] Calculated from table, p. 43, Report on Dept. of School Hygiene. Boston, 1908.

[5] Personal communication from Dr. S. J. Baker, Chief of Division of Child Hygiene.

[6] Bulletin Chicago School of Sanitary Instruction, April 3, 1909.

[7] C. M. Sneed and G. M. Whipple, THE PSYCHOLOGICAL CLINIC, Vol. II, No. 8, January, 1909, p. 236.

A similar divergence is seen in the figures for defective hearing. Among our children over 7 per cent were found defective in either ear, whereas the number able to hear the standard whisper with neither ear, at a distance of over ten feet, was only a little over 2 per cent. This corresponds fairly with results obtained elsewhere:

DEFECTIVE HEARING IN PUBLIC SCHOOLS.[8]

| | Per Cent |
|---|---|
| Edinburgh, Scotland (1904) | 12.2 |
| Dunfermline, Scotland (1907) | 4. |
| Cleveland, well-to-do district (1907) | 5.2 |
| Cleveland, congested district (1907) | 1.8 |
| Massachusetts, except Boston and environment (1907) | 5.8 |
| Boston and environment (1907) | 7.7 |
| Boston (1908) | 7.6 |
| New York City (1906) | 2. |
| New York City, Borough of Manhattan (1908) | 1. |
| Chicago (1909) | 2.7 |
| Jefferson City, Mo., either ear defective (1908) | 7.7 |
| Jefferson City, Mo., both ears defective (1908) | 1.3 |
| St. Louis County, Mo., either ear defective (1909) | 7.3 |
| St. Louis County, Mo., both ears seriously defective (1909) | 2.2 |

Here, too, our figures suggest that the variation in the results obtained elsewhere may, at least in part, be due to the fact that in some places any departure from the normal is recorded whereas in others only a serious defect is counted.

Adenoids sufficiently well marked to interfere seriously with nasal respiration were found in less than 1 per cent of our children. This is distinctly less than the findings elsewhere.

PREVALENCE OF ADENOIDS AMONG PUBLIC SCHOOL CHILDREN.[9]

| | | |
|---|---|---|
| New York City (1908) | 16.4 | per cent |
| Boston (1908) | 4.7 | " |
| Chicago (1909) | 3.7 | " |
| St. Louis County | 0.9 | " |

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[8] See references for previous table.
[9] See references for first table.

The low percentage of adenoids among our children is probably partly due to the fact that we included only well marked cases. It is also doubtless influenced by the probability that in an intelligent suburban population an unusually large proportion of the children suffering from adenoids receive proper surgical attention. It is of interest to note that, without exception, every one of our cases of adenoids had markedly defective hearing.

### 2. *Influence of Sex Upon Vision and Hearing.*

On the whole it would seem that defective vision was a little more prevalent among girls than among boys, whereas the reverse is true for defective hearing. Gulick and Ayres have made the same observations in New York in regard to visual defects.

INFLUENCE OF SEX UPON VISUAL AND AUDITORY DEFECTS.

| | Per cent | |
|---|---|---|
| | Boys | Girls |
| New York City (1908), defective vision[10] | 15.7 | 20.8 |
| St. Louis County (1909), defective vision | 29.1 | 31.1 |
| St. Louis County (1909), seriously defective vision | 13.5 | 15.1 |
| St. Louis County (1909), defective hearing | 8.7 | 6.0 |

These differences as found in St. Louis County are probably too small to have any definite significance.

### 3. *The Influence of Age Upon the Frequency of Physical Defects.*

In their careful study of New York City school children published last year, Gulick and Ayres made the very interesting observation that the frequency of defects tends steadily to decrease as the children grow older. This furnishes them with an explanation for their finding that in each grade the over-age children on the average have fewer physical defects than those of normal age. In our schools the same observation was made, as is shown by the following table. Our figures are uniformly lower than those of Gulick and Ayres since their records included a large variety of defects, while ours were limited to vision, hearing, and adenoids.

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[10] Gulick and Ayres, p. 199.

INFLUENCE OF AGE UPON PREVALENCE OF DEFECTS.

| | PER CENT OF CHILDREN WITH DEFECTS | |
|---|---|---|
| Age | Gulick & Ayres[11] | St. Louis Co. |
| 6 | 82.9 | 40.4 |
| 7 | 86.5 | 47.8 |
| 8 | 85.8 | 51.8 |
| 9 | 81.8 | 41.6 |
| 10 | 77.8 | 38.1 |
| 11 | 73.8 | 35.4 |
| 12 | 69.9 | 35.4 |
| 13 | 68.0 | 34.3 |
| 14 | 68.1 | 27.4 |
| 15 | 63.1 | 27.3 |
| Over 15 | | 23.9 |

A closer study of the data, however, discloses a very curious divergence on the part of our observations from those previously made. Gulick and Ayres, while they found a steady decrease in the prevalence of physical defects as the children grow older, noted that the frequency of impaired vision seemed, on the other hand, to increase with age. Observations made in Germany[12] show this fact even more strikingly, the percentage of short-sighted children increasing from a small per cent in the lowest grades to nearly 100 per cent in the highest. In our schools, on the other hand, a contrary tendency showed itself. With the exception of the first two years the frequency of short-sightedness seemed steadily to diminish with increasing age. This is most striking if we tabulate only the unrecognized visual defects, *i.e.* if we count as normal those whose defective vision is perfectly corrected by glasses. The phenomenon appears, however, hardly less clearly if we count as defective even those wearing correct glasses. The following table contrasts the observations of Gulick and Ayres with ours:

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[11] Gulick and Ayres, *op. cit.*, p. 195.
[12] A. Colsman, *loc. cit.*

INFLUENCE OF AGE UPON PREVALENCE OF VISUAL DEFECTS.

| Age | PER CENT OF CHILDREN WITH DEFECTIVE VISION Gulick & Ayres[13] | St. Louis Co. Uncorrected[14] | St. Louis Co. Total[15] | PER CENT WEARING GLASSES St. Louis Co. |
|---|---|---|---|---|
| 6 | | 29.4 | 29.4 | 0 |
| 7 | | 41.0 | 41.0 | 0 |
| 8 | 17.5 | 42.5 | 44.1 | 2.1 |
| 9 | 20.2 | 32.5 | 32.9 | 0.4 |
| 10 | 25.0 | 32.3 | 34.1 | 3.4 |
| 11 | 23.9 | 28.3 | 32.7 | 6.6 |
| 12 | 26.5 | 28.8 | 32.3 | 5.2 |
| 13 | 23.7 | 27.2 | 28.7 | 2.5 |
| 14 | 27.7 | 21.7 | 22.3 | 1.7 |
| 15 | 25.6 | 20.9 | 22.7 | 2.7 |
| Over 15 | | 17.7 | 22.1 | 8.0 |

About 3 per cent of all the children wore glasses of which two-thirds were approximately correct while one-third were definitely incorrect.[16]

The explanation of the divergence of our results from those obtained by others is not readily apparent. Why should the eyes of our children improve with age when those of city children tend to deteriorate? It is not due to any greater care on the part of parents, for the percentage of unrecognized and uncorrected visual defects is as great in St. Louis County as elsewhere and the percentage of visual defects corrected by glasses does not increase with the age of the children. Perhaps the smaller classes of suburban schools enable the teachers to give their pupils more individual attention and so to prevent undue eye-strain. Or it may be that the favorable hygienic surroundings of suburban children make it possible for visual defects spontaneously to correct themselves. The graver visual defects tend to become fewer with advancing age quite as definitely as the slighter ones, as shown by the following table. The greater irregularity of the fluctuations in the subdivisions of the visual defects is probably due to the fact that we are dealing with smaller figures.

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[13] Gulick and Ayres, p. 195.

[14] "Uncorrected" includes all children whose defective vision has not been fully corrected by glasses.

[15] "Total" includes all children with defective vision, whether corrected by glasses or not.

[16] The chief cause of this deplorable condition is probably the fact that glasses are often prescribed by opticians rather than by oculists.

INFLUENCE OF AGE UPON SLIGHT AND GRAVE VISUAL DEFECTS.

PERCENTAGE OF CHILDREN WITH VISUAL DEFECTS

| Age | All Visual Defects | Slight Visual Defects | Serious Visual Defects (Vision of both eyes less than 20/30) | Grave Visual Defects (Vision of both eyes less than 15/30) |
|---|---|---|---|---|
| 6 | 29.4 | 16.7 | 12.7 | 0.9 |
| 7 | 41.0 | 20.8 | 20.2 | 2.8 |
| 8 | 42.5 | 16.6 | 25.9 | 2.6 |
| 9 | 32.5 | 18.2 | 14.3 | 1.7 |
| 10 | 32.2 | 19.0 | 13.2 | 3.9 |
| 11 | 28.3 | 19.0 | 9.3 | 3.2 |
| 12 | 28.8 | 14.0 | 14.8 | 4.4 |
| 13 | 27.2 | 14.6 | 12.5 | 4.0 |
| 14 | 21.7 | 11.7 | 10.0 | 2.3 |
| 15 | 20.9 | 10.0 | 10.9 | 1.8 |
| Over 15 | 17.7 | 7.1 | 10.6 | 2.7 |

The gravest lesions alone show an irregular increase up to twelve years, but thereafter diminish. Such an increase is to be expected, since it is well known that short-sightedness tends to grow worse under the influence of school work. The surprising feature of these observations is that this increase it not seen in any but the gravest defects and even here not after the age of twelve.

Defects of hearing are not definitely influenced by age, as may be seen by the following table. I have not been able to find other observations for comparison.

INFLUENCE OF AGE UPON DEFECTIVE HEARING.

PERCENTAGE OF CHILDREN WITH DEFECTIVE HEARING

| Age | | Age | |
|---|---|---|---|
| 6 | 11.0 | 12 | 6.6 |
| 7 | 6.8 | 13 | 7.1 |
| 8 | 9.3 | 14 | 5.7 |
| 9 | 9.1 | 15 | 6.4 |
| 10 | 5.9 | Over 15 | 6.2 |
| 11 | 7.1 | | |

The extreme cases of adenoids were too few in number to render a classification by ages trustworthy. So far as our figures went, however, they indicated an increase in frequency up to 2.5 per cent at the age of ten years and thereafter a diminution. Gulick and Ayres[17] with their larger material found a steady decrease in frequency from six to fifteen years.

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[17] Gulick and Ayres, p. 195.

### 4. *Have Physical Defects an Important Bearing on School Progress?*[18]

This problem has apparently never been properly approached. Gulick and Ayres[19] divided the children in each grade into those of normal age and those over age. The latter are those who for one reason or another have been retarded in their school progress. They found, nearly constantly, a greater frequency of physical defects in each grade among the children of normal age than in those above the normal age. At first sight this might seem to show that physical defects are conducive to school progress. As they point out, however, it is clear that since the frequency of physical defects tends to decrease as the children grow older, children in each grade who are above the normal age will have fewer defects than those of normal age, just because they are older. This method can therefore not lead to any solution of the problem. It is better to approach the question from the other side. If for each age we determine the average grade of all the children of that age, such an average grade can be calculated for normal and for defective children. If at each age the normal children will, on the average, be found to have attained a more advanced grade than the physically defective ones, we may fairly conclude that these defects have proved a handicap to school progress, and the difference between the average grades will be an approximate measure of this handicap. The word "grade" is here used in the technical school sense, signifying a stage of scholastic progress. In our schools the children begin with the first grade, advancing annually, on the average, one grade up to the eighth. For purposes of comparison I have called the high school the ninth grade. When we tabulate our data according to this method we obtain the following table. It will be seen that, on the whole, the children with visual or aural defects make slower progress at school than their normal mates. The difference is not, however, nearly so great nor so constant as we might *a priori* expect; indeed, about half the time this difference is practically negligible. Moreover, the children with grave visual defects have apparently not at all lagged behind those with slighter visual impairment.

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[18] It must be remembered that in this discussion the term "school progress" is used to indicate the rate at which the children advance from one grade to another. It has nothing to do directly with the quality of the school work or the rate at which they acquire knowledge. In the ideal school, "school progress" will depend directly upon the quality of the work done by the children; practically, however, as appears below, this is apparently not the case.

[19] Gulick and Ayres, p. 191 ff.

AVERAGE GRADES OF NORMAL AND DEFECTIVE CHILDREN.

| Age | Normal children | Children with visual defects | Children with serious visual defects (both eyes less than 20/30) | Children with impaired hearing |
|---|---|---|---|---|
| 6 | 1.1 | 1.1 | 1.1 | 1.1 |
| 7 | 1.3 | 1.6 | 1.7 | 1.7 |
| 8 | 2.2 | 2.1 | 2.1 | 1.7 |
| 9 | 3.0 | 2.8 | 2.6 | 3.0 |
| 10 | 3.7 | 3.3 | 3.2 | 3.8 |
| 11 | 4.0 | 4.0 | 3.7 | 4.0 |
| 12 | 5.0 | 4.9 | 5.2 | 4.5 |
| 13 | 6.2 | 5.9 | 5.7 | 5.9 |
| 14 | 7.0 | 7.0 | 7.4 | 6.3 |
| 15 | 7.8 | 7.6 | 7.7 | 6.9 |
| Over 15 | 8.7 | 8.4 | 7.8 | 8.3 |

The question naturally arises: "Why do not these physical defects cause a greater and more constant retardation in the children's school progress?" There are apparently no data at hand upon which to base a reply. Perhaps physical defects have actually but little bearing upon school progress though this seems inherently improbable. A possible explanation has been suggested by a number of teachers who followed our work with interest. They ascribe our findings to the undue prevalence of the so-called "lock-step." At the end of each preordained period, practically all the children are promoted to the next higher grades, irrespective of whether they have done their work well or ill. The dullards are pushed along with their brighter fellow students and the latter are held back to allow the former to keep pace with them. An exception is made only occasionally, when the pupil is extremely quick or extremely deficient. Under these circumstances the school work of the children with defective vision or hearing might be seriously hampered without their school progress, as shown by a table like the above, being definitely retarded.

## *Conclusions.*

The following conclusions may fairly be drawn from our data:

1. Unrecognized or at least untreated defects of vision and hearing are nearly as common in our suburban communities as in large cities. Both call urgently for systematic medical inspection.

2. Unrecognized adenoids, so extreme as to cause serious interference with normal respiration, were not found to be very

common. In nearly one per cent of the children, however, the adenoids imperatively demanded operation. The condition was apparently not realized by the parents and here, too, adequate medical inspection might be of great service to the children so affected. It is probable that the marked deafness, present in every one of the children with adenoids, would disappear promptly after operation.

3. Defective vision seems a little commoner among girls and defective hearing among boys. The difference it not, however, very great.

4. In other communities a progressive increase in the prevalence of impaired vision was noted as the children grew older, whereas in St. Louis County the reverse was found to be true both as regards slight and grave defects. The explanation of this fact is not readily apparent. It does not, however, furnish an argument against inspection, since at the best these defects are common enough. The fact that one-third of the children with spectacles wore unsuitable glasses is also suggestive in this respect.

5. Our data show that to a certain, though not very great extent, the children with impaired vision or hearing progress more slowly in their school work than their normal fellow students. The evil effects of unrecognized physical defects may, however, go far deeper than this. If it is true that, to a great extent, children are promoted from one grade to the next irrespective of the quality of their school work, the brighter children are necessarily held back to a pace that can be followed by the dullards. It is clear that the latter class will in part consist of children mentally normal but handicapped by impaired hearing or vision or by other remediable defects. Adequate medical school inspection would lead to the recognition and, to a great extent, to the correction of such defects. Such children would then not only themselves be able to do better work, but by ceasing to act as a drag upon the normal children would enable the latter to progress more rapidly. The efficiency of school inspection, in this respect, is shown by the fact that in cities in which this measure has been in operation for some years, a considerable diminution in the prevalence of physical defects has been noted.

6. The marked divergence between the data obtained in different cities, or in the same city by different investigators, indicates the need for greater uniformity in methods of tabulating these statistics. Thus children with slightly impaired vision in one eye would by some examiners be classed as normal, by others as

defective. For statistical purposes it is important for the investigator to state just where he draws the line between defective and normal. As regards vision, hearing, and adenoids, a division into slight and serious defects is to be recommended.

### *Appendix.*

It is probable that in future investigations, the bearing of physical defects upon school progress can best be estimated by calculating the average grade for each age in normal and in defective children. The problem, arithmetically, is an interesting variation of the method of determining the point of equilibrium of a straight lever. The number of children in each grade is multiplied by the number of the grade. The sum of these products divided by the total number of children gives the average grade.

Example: Normal children aged eight years are divided among the first four grades as follows, the total number of normal children of this age being 94:

| Grade | | Number of Children | | Product |
|---|---|---|---|---|
| 1 | x | 17 | = | 17 |
| 2 | x | 50 | = | 100 |
| 3 | x | 26 | = | 78 |
| 4 | x | 1 | = | 4 |
| | | 94 | | 199 |

$\frac{199}{94} = 2.16$, the average grade of normal children aged eight years.

If we regard as a unit of work done, the passing through one grade of one child, then towards the end of the school year, the 17 children in grade 1 will have done 17 units of work. The 50 children in grade 2 will, during their school life, have done 100 units of work, the 26 in grade 3 will have done 78 units, etc. Thus the 94 normal children aged eight will have done 199 units of work and the average child will have done 2.16 units. The last will therefore represent the grade of the average typical child of this group. It is clear that unless artificially held back, the more fit a group of children is, the greater the number of units of work it will accomplish and the higher its average grade will be. Thus, in the absence of the so-called "lock-step," the difference between the average grade, at each age, of normal children and those with any special defect will be a measure of the influence exerted by this defect upon school work. Or, on the other hand, assuming that such defect should seriously influence school work, the absence of such a difference indicates the prevalence of the "lock-step".

# THE NEED OF IMPROVED RECORDS OF THE PHYSICAL CONDITION OF SCHOOL CHILDREN.

By Walter S. Cornell, M.D.,

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The reports on the physical condition of school children which have been issued in the past by school and health authorities, have been fair statements of conditions found and have served to demonstrate the wisdom of medical inspection and to further its universal adoption. It must be admitted, however, that up to the present time they have not, as a rule, been compiled in the most scientific manner, nor have the records of the original physical examinations evidenced a comprehensive understanding of the various diseases and defects encountered. Curable and noncurable, primary and secondary, temporary and permanent, mild and severe defects have been lumped together to form totals which have further been swelled by the addition of mere symptoms such as headache, earache, and toothache. No intelligent conception has been given of the relation to each other of the number of defective children, the number of defects found, and the number of children receiving parents' notices. As a consequence, enormous figures may be quoted which are impressive enough, but which fail to add to our medical knowledge. As a matter of fact they have on occasion actually done harm by reason of their employment as a basis for deductions as to the degeneracy of the race, the relation of physical to mental defect, etc. Thus it is not uncommon to see such press notices as, "of two hundred and fifty children examined in the schools of ———, eight per cent were found to be physically defective," "of fifty children examined at ———, forty possessed decayed teeth," "Dr. ——— finds by a statistical study that there is no relation between physical and mental defect." Such reports fail to state that the first investigator had zealously included every minute imperfection, and had multiplied one eye-strain case into the four defects of "defective vision," "headache," "blepharitis," and "stye;" that the second had examined a class of eight-year-old children whose age bespoke a large number of decaying temporary teeth; while a third had drawn his inferences after ruining his work by including decayed teeth and the enlarged cervical glands secondary thereto among the physical defects considered.

Let us make our physical examinations and compile our statistics in conformity at least with the following principles:

1. The principal defect should be clearly recorded and emphasized. Those most frequently met with are ten in number, eyestrain, enlarged tonsils, nasal obstruction, defective hearing, discharging ears, poor nutrition, decayed teeth, stoop shoulders (including flat chest), lateral curvature, nervous exhaustion and mental defect. In this way only can a comprehensive analysis of conditions be obtained.

2. Secondary symptoms such as headache and catarrh should not only be recorded in such manner that their secondary character is understood, but should be grouped so that medical knowledge as to their relative frequency may be acquired.

3. The number of physical defects reported to the parents for treatment should be stated separately from the number of physical defects noted of minor degree or character. Also any statement as to the number of defective children should specify the nature of the defects recorded. Without minimizing the importance of sound teeth, it is evident that the number of decayed teeth encountered is so enormous that their addition to a general list of the other physical defects practically doubles the total number. The various physical defects are of such a widely different significance that such a general list is of little scientific value.

4. Non-curable defects such as weak heart, high palate, paralyzed limbs, and temporary ailments such as styes, boils, and infrequent headaches, should receive separate record.

5. The individual eye records should state the acuity of vision, the existence of squint, and the wearing of eye-glasses. By this method only can material for proper further study be produced. Routine official statistics as to these details is unnecessary, since they are nearly constant factors and standard figures can be established by a few intelligent studies.

6. Age, grade and social condition should be considered in connection with physical defect. By this method developmental defects can be traced year by year throughout school life, the maximum prevalence of nasal obstruction and decayed teeth at definite ages demonstrated, and the relation of these various defects to the environment of the children determined.

In an article in a former issue of this journal[1] the writer endeavored to follow these general principles in his record of the physical condition of the school children attending the School of Observation of the Department of Pedagogy of the University of Pennsylvania. While the small number of children, their above-average social station, and the fact that they attended the school for personal reasons in each case, all forbid the assumption that the figures presented correspond closely with those drawn from the examination of the total school population of a great city, the general ideas here advocated were utilized in their preparation so far as opportunity permitted.

[1] THE PSYCHOLOGICAL CLINIC, Vol. III, No. 5, October, 1909, p. 134.

# RETARDATION AND ELIMINATION IN THE SCHOOLS OF MAUCH CHUNK TOWNSHIP.

By Alvin E. Wagner, A.M.,

*Supervisory Principal of Schools, Nesquehoning, Pa.*

It is some time since the following table relating to public school attendance appeared in the various educational papers of the country. It was prepared by W. C. Smith, of the Winona Technical Institute, Indianapolis, Ind., who took the data from the report for 1903 of William T. Harris, Commissioner of Education.

| GRADE | AGE | NUMBER OF PUPILS | |
|---|---|---|---|
| 1 | 7 | 5,149,296. | Children enter first grade. |
| 2 | 7 | 2,912,462. | Nearly one half have dropped out. |
| 3 | 8 | 2,426,263. | Still leaving school. |
| 4 | 9 | 2,168,956. | |
| 5 | 10 | 1,288,814. | Breadwinning by the children begins. |
| 6 | 11 | 705,885. | "The call of the dollar." |
| 7 | 12 | 405,693. | |
| 8 | 13 | 323,697. | About 17 per cent of the pupils finish the eighth grade. |
| 9 | 14 | 243,433. | Enter high school. |
| 10 | 15 | 147,192. | |
| 11 | 16 | 101,903. | |
| 12 | 17 | 73,596. | A very small portion complete high school. |

Over 10,000,000 children leave school to go into the trades without a complete common school education. There are 32,000,000 breadwinners in the United States, 2,000,000 of whom do brain work, and the remainder, 30,000,000, are employed in the manual labor trades.

According to this table only 17 per cent of the pupils who enter the first grade of the elementary school remain to complete the work of the eight grades; 6.25 per cent of these enter the high school, and only a lamentably small portion, 1.25 per cent of those who enter, receive the honors of graduation. From the same table it may be seen that 4,225,599 children annually leave school without receiving the training and advantages which the nation is preparing and equipping schools to furnish.

That so many children should enter the various industries to make their living, who do not have the essential elements of an education is a matter of serious concern. The causes which effect this elimination are a serious menace to the commercial, industrial, and social welfare of the nation. It was to try to determine what these causes are, and to study the possibility of their removal, that this investigation was undertaken at Dr. Witmer's suggestion.

In trying to determine the causes of elimination the investigator does not proceed very far before he is confronted with the fact that many of the eliminated children at the time of leaving are not in the grade where according to their age and time of school attendance one would naturally expect them to be. This raises the question as to the cause of their retardation, for it is altogether likely that their retardation is one of the reasons for their elimination.

As used in this article, retardation signifies a subnormal rate of advancement on the part of any pupil in doing an amount of work which has been prescribed for a given period of time, and acceleration on the other hand is used to indicate a rate of progress more rapid than that at which the prescribed work is performed by the normal child. If we grant that the normal child under normal conditions can complete the work prescribed for a given time in the period assigned, then for all practical purposes the rate of progress of the normal child represents the normal rate; and all who advance more rapidly than this average are accelerated, while those who lag behind it are retarded. The unit of acceleration and retardation most convenient for all practical purposes is the single grade or year.

| TEACHER—<br>J. R. Mulligan<br>SCHOOL—<br>A Grammar | Nationality of Parent | Condition of Home | Home Language | Place of Birth | Date of Birth | Age at Entrance | Years Old Now | Grade Entered | Expected Grade | Actual Grade | No. of School Belonged | Amount Accelerated | Amount Retarded | Terms Omitted | Cause of Retardation | Cause of Acceleration |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PUPIL'S NAME—<br>James Crossin | A | G | E | N | 12-9<br>1900 | 5 | 9 | 1 | 4 | 5 | 1 | 1 | 0 | 0 | | Early Start |

The above is a copy of the blank form which was used for collecting the data. The sheets were large enough to furnish recording space for each child in the room. The cause of retardation was recorded as one of the following:

1. Irregular attendance.
2. A somewhat lengthy absence owing to sickness.
3. Changing from one system of schools to another or to several others.
4. Beginning to attend school after six years of age.
5. Slow learning due to the lack of brain development.
6. General indifference.
7. The difficulties which foreigners have in mastering the English language.
8. Feeblemindedness, requiring institutional care and treatment.

In the cases of acceleration early start and special aptitude for learning were always found to be good and sufficient reasons.

In order to get as definite a knowledge as possible of the situation, the record for each child was taken by myself. My duties as supervisor during the last five years have brought me into rather close relation with each individual child so that I knew all of them by name and had a fairly good idea of the mental status of each one of them, having on many occasions marked examination papers which they prepared for me in my presence. All the data used relate to school conditions as they existed during the school term of 1908 and 1909.

From the item on nationality was gleaned the following:

1. Total number of children in attendance, 842.
2. Number of children whose parents were born in America, 507.
3. Number of children whose parents were born in Europe, 314.
4. Number of children who were born in Europe, 21.

The number of children of American parentage as compared with the number whose parents were born in Europe is perhaps rather alarming. The homes of many of the children whose parents are not naturalized are not what they should be. This is especially true of those located in the Italian and Hungarian settlements. There are, however, only a small number of children whose appearance is not at all times presentable and in general the children of foreign parentage, who from the major portion of those retarded, advance about as rapidly as do the American children when once they have mastered the difficulties of the English language.

The table at the foot of this page gives all of the children of each of the grades divided into groups according to ages. The numbers at the top of the table represent the ages of the children, and the numbers in the second row represent the number of children of a given age in the first grade. The same applies to each grade up to the twelfth. From this table the following facts were gleaned:

*Number Retarded.*—One year, 205; two years, 46; three, 24; four, 7; five, 6; six, 2.

*Number Accelerated.*—One year, 118; two years, 19; three, 2.

When the data were consulted for causes of retardation, and the results tabulated, the following condition was found:

*Number Retarded.*—Causes of retardation: Poor attendance, 20; sickness, 16; changing schools, 22; late start, 36; slowness in learning, 52; laziness and indifference, 16; language difficulty, 123; feeblemindedness, 5. Total, 290.

Out of a total attendance of 842, 290 or not quite 34.5 per cent were found to be retarded. This is very likely a much better showing than would have been made some years ago before the present truant officer, who really enforces the Compulsory Attendance Act, had been regularly employed.

That so large a number should be retarded because of language difficulty will probably surprise no one. The wonder is rather that the number should not be larger, especially when consideration is given to the fact that over one half of those who are retarded because of the language difficulty, attended the school at "Little Italy," where for three terms one teacher had been "keeping school" with over fifty little Italians enrolled.

| 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | Age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 25 | 80 | 35 | 18 | 8 | 1 | 1 | 3 | 2 | | | | | First Grade |
| | | 18 | 48 | 34 | 15 | 5 | 4 | 3 | 1 | | | | | Second Grade |
| | | 2 | 8 | 40 | 31 | 18 | 7 | 4 | 2 | 1 | | | | Third Grade |
| | | | 1 | 16 | 31 | 44 | 19 | 12 | 12 | 1 | | | | Fourth Grade |
| | | | | 4 | 14 | 21 | 25 | 10 | 11 | 3 | | | | Fifth Grade |
| | | | | | 2 | 7 | 21 | 21 | 8 | 3 | | | | Sixth Grade |
| | | | | | | 5 | 9 | 27 | 13 | 3 | | | | Seventh Grade |
| | | | | | | | | 4 | 15 | 2 | 2 | | | Eighth Grade |
| | | | | | | | 2 | 3 | 8 | 11 | | | | Ninth Grade |
| | | | | | | | | | 2 | 3 | 5 | | | Tenth Grade |
| | | | | | | | | | | | 5 | 7 | | Eleventh Grade |
| | | | | | | | | | | | 3 | 1 | 5 | Twelfth Grade |
| 7 | 25 | 100 | 92 | 112 | 101 | 101 | 88 | 87 | 74 | 27 | 15 | 8 | 5 | Total 848 |

Twenty pupils, or a little over 2 per cent of the present school population, are retarded by poor attendance. The law fixes the minimum of attendance at 70 per cent, but allows school boards the privilege of requiring any per cent of attendance beyond this that they may see fit to select. The school authorities of Mauch Chunk Township, realizing that those children get most out of school who attend it most regularly, fixed 90 per cent as the minimum, and with this as a standard the law is effectively enforced.[1] The children less than eight years of age to whom the law does not apply do not attend irregularly since their help at home amounts to very little, and they are sent to school whenever the weather permits. This gives them an attendance of reasonable regularity.

That there should be fifty-two slow learners or children bordering on feeblemindedness among eight hundred and forty-two is but corroborative evidence of what THE PSYCHOLOGICAL CLINIC has often stated in its advocacy of special schools. There are no funds available in the district to provide special classes for these children, even if it were possible to overcome the difficulty of transporting them from the various localities of a mountainous district covering twenty miles square. All of these slow learners acquire the ability to read, write, and do elementary number work before they leave school, and until the population becomes denser or the means of transportation better, this is probably all that can be accomplished.

The tendency on the part of the majority of foreigners is to send their children to school before they are six years of age, the legal time of starting, rather than give them a late start when they are beyond this age. The major portion of those who are retarded because of a late start are the children of parents who were born in Europe, and who failed to send them to school when they came of school age. In a somewhat flexible system of grading, children having no handicap of language or inferior brain development, who start late, usually overtake the regulars before they reach the end of the course, so that this cause of retardation may safely be considered a negligible factor.

Of the twenty pupils who were retarded because of changing schools, all came from rural districts where the term was short, the teacher's wages low, and the organization which supervision would bring was entirely lacking. Better organization and management by the state would remove this cause of retardation.

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[1] Act of May 29, 1907, Pennsylvania School Laws, p. 40.

Until rural schools are centralized, medical inspection in them will be well nigh impossible; and it is doubtful if a corps of inspectors and school nurses would ever be able to keep the schools and the community so free from various kinds of infection, that some pupils would not become retarded because of school time lost through sickness. Children's diseases are ills that human flesh is heir to, and while everything should be done to prevent their spread, when it is remembered that less than two per cent of the whole school population is retarded through sickness, it is probably utopian to expect to reduce this percentage further.

The sixteen children to whom indifference is ascribed as the cause of retardation are boys and girls of American parentage whose home environment is not what it should be. These children (two are girls, fourteen boys) spend their evenings on the streets, and in the moving picture parlors. Individual attention and the personal touch of the teacher, it is hoped, will give them encouragement, inspiration, and the sense of something to be achieved, and by this means the number may be very much reduced.

That there are some pupils in every system who are retarded is quite natural, and in any system which is reasonably flexible accelerated pupils are equally to be expected. The investigation brought to light the following facts:

Per cent of the whole number of children accelerated, 16.6; per cent of the whole number of children accelerated one year, 14; per cent of the whole number of children accelerated two years, 2; per cent of the whole number of children accelerated three years, 0.35.

When it is remembered that in cases of rather unusual acceleration the child has done almost no supplementary work, that usually he has but little knowledge of the background of the facts which in a more or less mechanical way he has mastered, it becomes evident that to be in advance several years is not without its disadvantages.

The law allows children between fourteen and sixteen years of age, who secure a working certificate, to be employed at some remunerative occupation, and during the year under consideration in this article the issuing of these certificates was the function of the civil authorities and not of the school officers. Certificates were issued in Mauch Chunk Township to almost every child whose parents were willing to affirm his age to be fourteen years. This tended to put a premium upon misrepresenting the child's age, especially among the foreigners whose birth records were not available, and so led to abuses. As a result there were fifty-three children who were permitted to leave school on a working certificate.

The grades in which they stopped and the number of children who left from each grade follows:

Ninth grade, 8; eighth, 14; seventh, 15; sixth, 12; fifth, 4; total, 53.

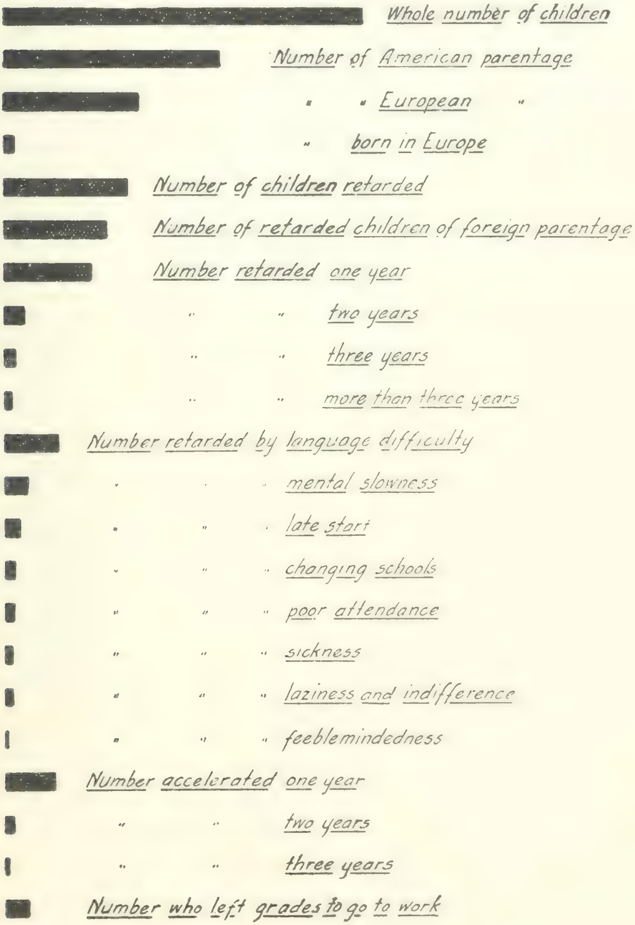
All but eleven of these children according to their classification at the time of leaving school were retarded. Nine of them were retarded two years; two, three years; and thirty-one, one year. Just how effective this retardation was in causing the elimination, it is impossible to determine. Going to work for these children meant assisting in the family support, evenings without study to enjoy the attractions of the street and the amusement places, more liberal allowances of spending money, associations with older and larger companions, freedom from books which had for them but little utility and less interest, and relief from the drudgery and routine of the school room. It is easy to see that the effectiveness of retardation in causing elimination when associated with an array of motives such as these may easily be overestimated.

Of the fifty-three children who left school to go to work, some are employed about the mines or the coal companies' offices, some are working in the silk mills, some are engaged by the tradespeople, and the remainder are doing domestic service. By actual investigation it was found that their wages varied from 30 cents to $6.50 a week in the silk mills, from 60 cents a day to $1.25 about the mines, from 75 cents a week to $1.50 among the tradespeople, and the remainder are doing domestis service.

It is not within the province of this article to discuss whether many families are really in such stringent circumstances as to need so small an amount as the earnings of many of these children represent, or whether such stringency is caused by involuntary idleness, or low wages, or intemperance in some form or other on the part of the parent. The parents of all the eliminated children when interviewed, stated directly or indirectly that the earnings were a necessity to the family maintenance, and in most cases the presence of such a necessity was perceptible in the home. Necessity as a factor in elimination can only gradually be removed since the causes producing it are as complex as our social institutions and as indissolubly interwoven with them. Especially is this true now that the increase in the cost of living is in no way commensurate with the increase in wages.

CHART

Showing Graphically the Results of this Investigation.



The investigation next concerned itself with trying to determine what, in the opinion of the people who employ the eliminated children, the schools might do in order to give these children a better training and a fuller preparation for the work they will probably do, and the life they must live.

The managers of the silk industry responded that the schools can do nothing by way of direct preparation. They would prefer to teach their employes right in the mills while the individual being taught is actually doing the work to be performed or seeing it done by their representative who is an expert. They contend that so far as the individuals whom they employ are concerned, the function of the school is rather to instil and inculcate habits and ideals of industry, honesty, sobriety, and reliability, than to teach the doing of things which would develop the kind of dexterity they require. Let the school give to the child as much knowledge as the time he may remain permits and let it be given in such a manner as to cause the formation of right habits and ideals; let the school do its utmost to attend to the proper development of the child's physical organism and then the processes and acts requiring dexterity can soon be learned and best be taught by the manufacturers themselves.

The mine superintendents and bosses considered that the schools by giving a fairly good knowledge of the elements of geology and physics could materially enhance the interests of the future miner. Those who employed the girls for domestic service in hotels and boarding houses when consulted as to their opinion concerning what the schools might do to better prepare the girls for this class of work, first emphasized the necessity for rectitude of character, but when the idea of introducing into the school curriculum courses in buying, serving, and cooking as well as house decoration and sanitation was suggested, they admitted that such training, if it could be given, would be very valuable to the girls, and would have a tendency to keep them in school longer.

The most serious cause of elimination in the mind of the investigator is that contained in the following question which frequently confronted him and was repeatedly asked in some form or other: "What is the use of my child's going farther?" "How will the things which it will get in school help it in the silk mill? In the mines? In being a dressmaker?" "I have sent my boy to the high school three years already, and all he can get to do is drive mules and tend switches, what is the use of sending him longer?"

Of what real use to people who work with their hands is the abstract arithmetic, technical grammar, dead lumber geography, dissociated historical facts, the spelling of words which cannot be used, and the impractical physiology, which constitute the mental diet of the great majority of the children of the upper grades in the elementary schools where the elimination usually occurs? The things which appeal to the natural instincts of children are excluded from the school and obsolete notions and ancient customs are emphasized. There is excluded almost everything which fits a child for the kind of life that most of them will have to live, and the vast majority will want to live, and there is included a lot of matter which to them is as dead as a door nail and as useless and as obsolete as the grain cradle of their ancestors. Only special schools teach the things needed to make a living. Industrial history, treating of the present status of the great moving forces of steam and electricity, books about modern customs and social usages, farming, millinery, salesmanship, care of babies, the chemistry of house keeping and the art of home making,—all these could be taught to the children who to-day are being eliminated by thousands after being taught to read, write, and cipher.

No investigation with parents can be carried on very far before one begins to realize that a large majority of the children are removed from school because the schools do not give them the practical and everyday things which both parents and children feel the children need and want. The investigator is soon made aware that the plans which the school authorities are trying to carry out do not hit the mark, and that children are wasting time and finally being eliminated because these plans are ineffective; that if children are to be kept at school, such plans and means must be adopted as will attract and hold them. Investigation will reveal the needs, and once the needs are known it behooves the school authorities to modify the system so that these needs may be supplied. In order to make the required changes, it may be necessary to abandon some well established and aristocratic usages and to learn valuable lessons from the correspondence schools and industrial institutes.

## REVIEWS AND CRITICISM.

*School Reports and School Efficiency.* By David S. Snedden and William H. Allen, for the New York Committee on Physical Welfare of School Children. New York: The Macmillan Co., 1908. Pp. xi + 183.

To the great majority of people the school report is the only tangible evidence of what the school administration is doing. Citizens generally canot be expected to know what goes on in the school rooms and in the meetings of boards of education, nor what is taking shape in the back of the superintendent's head. Even were they afforded the utmost opportunity and gifted with unusual perception, it is not likely that without convenient summaries and condensed statements they could form any idea of the public school system as a whole.

If the school report is at once the evidence and test of the school administration it is clear that its ideal is such a marshalling of the facts regarding the schools of the city as will give the reasonably intelligent citizen a clear notion of just how well the schools are performing the duties entrusted to them.

The book before us is a study of the school reports for the purpose of ascertaining how far and in what manner they seek to embody such an ideal. It is a study in comparative administration.

This study reveals so wide a diversity among school reports as to preclude the idea of any uniformity of belief as to what they should contain. While uniformity of scope and treatment is not to be expected, it might reasonably be supposed that the similar purposes of the school administration in different places would give to these reports a certain family resemblance. In so far as such a resemblance can be traced, it does not appear to be so much the result of parallel internal development as the product of external compulsion or suggestion. The fact that state educational departments are charged with the allotment of state school funds according to a fixed unit in school work, has led to an emphasis upon such units. A similar influence has been exerted by the United States Bureau of Education in its request for information along certain definite lines.

Apart from these influences tending toward a certain uniformity, there are other forces working in the same direction, though less effectively. The trend of current discussion in educational affairs is not without its influence, and when certain facts are needed in any city to point a moral or adorn a tale, the experience of other cities suggests investigations or arrangements of material which are new to the city in question. Conscious efforts to promote uniform treatment of statistical data, a theme which has been discussed almost to weariness by the National Education Association and kindred organizations, have been singularly fruitless.

With these general considerations by way of introduction the work takes as its main theme the scope of educational statistics. In them we find the condensation of educational experience, and here more than in other parts of the text we should expect the experience and practice of one city to be helpful to another. Too often, indeed almost universally, the tables of facts are isolated from the text of the report and no effort is made to explain their meaning or set forth the salient facts which they present. In view of the volume of tabular matter there is a painful paucity of interpretation.

The method pursued by the author, in recording the facts, is to furnish specimen tables from the different reports in regard to each matter touched upon, giving a selection of the simpler and then the more detailed statements to be found in them. The following heads are treated in this way: School plant, expenditure, census, attendance, age of pupils, promotion, survival, compulsory attendance, high schools, evening schools, vacation schools, libraries, medical inspection, teachers, and summaries. The variety of forms exhibited is highly instructive although, it must be confessed, somewhat bewildering. The author has confined himself so strictly to a study of methods that he is disposed to let the tables speak for themselves. This is all very well if one understands their language. One cannot help but feel that in many cases some explanation why the detailed tables are to be regarded as superior, beyond the fact that they are more detailed, would have been illuminating and would have somewhat relieved the tedium for the general reader of this important chapter.

No attempt is made to outline a model report. Instead, in chapter five we have a series of questions which might be answered in a school report. The list does not pretend to be exhaustive, but in reality it constitutes a somewhat formidable program if it be assumed that the greater part of these points should receive attention.

Conscious of the fact that somewhat staggering demands are made on the school administration, the discussion of "suggested economies and improvement" comes as an antidote. This is a brief discussion of short cuts and methods to get at desired results, tending to a simplification of records and such forms and registers as will supply the needed information, without excessive work. This is a very vital point and the suggestions as far as they go are admirable.

While the subject presented in these pages is thoroughly technical, the work may be commended most heartily to school authorities and to all who are interested in the progress of our schools. It is an appeal for exact information and should not be passed by without a hearing. Such information in regard to our schools—one of the most important branches of our government—is sadly lacking. It has too often been assumed that the management of schools was a matter for experts, which outsiders could not properly judge. Within certain limits this is true, but it fails to distinguish between the scholastic and the administrative sides of school work. We undoubtedly need, both among our school authorities and in the public at large, a keener perception of the requisites of a sound and effective administration. It is not perhaps too much to say that there is no great business enterprise of the people of which they know so little as they do of their schools. In private affairs such ignorance on the part of directors and stockholders would lead to bankruptcy.

The authorship of the several chapters of the book is distinctly stated. The general considerations herein briefly noted are the work of Dr. Snedden; the particular application to the city of New York is the work of Dr. Allen. Those who are familiar with Dr. Allen's work are aware that he can always be relied upon for a readable and spicy statement. But in view of the predominantly local interest of his discussion and the inexorable limits of space it has seemed best in the foregoing notice to lay the greater emphasis on those larger aspects of the subject which are from the pen of Dr. Snedden.

ROLAND P. FALKNER.

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*On the Training of Parents.* By Ernest Hamlin Abbott. Boston: Houghton, Mifflin & Co., 1908. Pp. 140.

It is a thankless task not unaccompanied by danger to animadvert on the subject of parents. The reader is in all likelihood an actual, prospective, or would-be parent himself, with the pride and acute sensitiveness of that large class.

Mr. Abbott in his book "On the Training of Parents," treats the subject with humor and tact and on the whole lets the parent down not ungently. His book does not cover so broad a range as its title might lead one to suppose. He confines himself to pointing out the attitude toward the child which he considers brings the best results and causes the least unnecessary friction. "The theory of total depravity, by which our forefathers explained the unpleasant doings of youngsters, is," he concludes, "a doctrine which parents devised in order to shift the burden of their own failures to the shoulders of their offspring." And he ventures to doubt whether it is really just to lay the Fifth Commandment upon all American children without pointing out the reciprocal duty therein implied. He might go further and challenge the idea that life is an inestimable gift bestowed upon us by our parents, receiving which we immediately incur a lasting obligation. "Sue for a Debt we never did contract, And cannot answer—Oh the sorry trade!"

If at birth the baby is willing to cry "quits" with his parents, he should be considered by any fair-minded person a generous infant. As children are brought into the world for every reason except for their own interest and pleasure, the debt cannot be fairly said to start on their side. In the attitude of some parents toward their offspring, we are reminded of Mr. Pumblechook's exhortation to poor Pip,—"Especially be grateful, boy, to them which brought you up by hand." Whether the credit side, after much shifting, rests finally with the parent or child must depend on the individual case.

Mr. Abbott in his first chapter points out two methods of governing children, one by collision, "wait till the child does wrong, then collide with him," unfortunately only too popular; the other, governing by habit. He draws a pretty distinction between governing them and interfering with them, and urges the parent to cultivate the habit of non-interference, another name for the habit of self-restraint. He believes that the process of training children is the process of forming habits and that to provide children with a contented acquiescence in a regular life and an habitual disposition to obedience requires in the parents no unusual qualities of mind.

Mr. Abbott lays great emphasis on the necessity for parents *respecting* their children. He says, "No one who respects another will lie to him, or visit him with empty threats, or make to him vain promises; yet fathers and mothers in all parts of the country are at this moment lying to their children, threatening them with punishments they do not mean to inflict, and making promises they do not intend to fulfill." Mr. Abbott does not believe in administering corporal punishment in the jaunty spirit of the Chinese proverb: "A cloudy day—leisure to beat the children." At the same time to the question, "Do you believe in spanking a child?" he thinks the only possible answer is, "What child?" Many parents knowing how worse than useless a slippering has proved, will yet recognize the truth of the statement: "With some temperaments in some moods the rod is like the wand of a magician." The child "responds to it with renewed affection and restored sweetness of temper."

Mr Abbott gives some convincing examples to prove that a trained imagination is a necessary quality in the parent who would develop in a child the spirit of obedience. Against the modern complicated mechanical toys Mr. Abbott's face is sternly set. "Simple food, simple occupations, simple toys, simple surroundings—there are no riches like these to the child—or the adult—who has not been robbed of his imagination."

To mothers, Mr. Abbott says, "There are two ways in which you can act. You can either adjust your children to their environment, or their environment to them." It does not need the forceful examples offered to convince us of the paramount value of the first of these two methods.

Instead of looking upon children's quarrels as deplorable, Mr. Abbott sees in them an educational implement made ready to the parents' hand. He considers it a parental duty to teach children how to quarrel and what to quarrel about, and thinks an only child's indisputable misfortune lies in the fact that there is no one in the family he can really quarrel with.

Intelligent parents who read Mr. Abbott's interesting book will discover that the principal part in the training of their children is the training of themselves, and that "the art of being a parent is an art of give and take."

E. R. W.

## NEWS AND COMMENT.

### *A Journal of Educational Psychology.*

Announcement is made that in January, 1910, will be published the first number of a *Journal of Educational Psychology,* including experimental pedagogy, child psychology and hygiene, and educational statistics. The editors are W. C. Bagley, University of Illinois, J. Carleton Bell (Managing Editor), Brooklyn Training School for Teachers, C. E. Seashore, State University of Iowa, and Guy Montrose Whipple, Cornell University, assisted by a staff of thirty-eight collaborators. THE PSYCHOLOGICAL CLINIC extends a hearty welcome to the *Journal of Educational Psychology,* and wishes all success to its editors. It must regret, therefore, the necessarily depressing effect upon the teacher of the promised symposium on how psychology "MAY be made most fruitful for those engaged in the actual work of the schools." Surely after one hundred and fifty years of special articles, monographs and even treatises on the subject, we ought to be able to assume without discussion that psychology is the basis of education. Why not ask each contributor to the symposium to write on the topic: "What I have done [not am going to do, or, *think ought to be done*] to make psychology really useful in the school room."

The Psychological Clinic

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# A MONKEY WITH A MIND.

By Lightner Witmer.

It was no special interest in Peter[1] which took me to a performance at Keith's Theatre in Boston on the evening of September fourteenth last. I was then interested only in ascertaining the extent to which the anthropoid apes could be trained and perchance educated. Sometime during the past winter, in conversation with Dr. Furness,[2] I had maintained that there was no reason why an ape who could be trained to ride a bicycle might not be taught to articulate at least a few of the elements of a language, and I expressed the desire to undertake this experiment the outcome of which, whether successful or not, I thought would be an important contribution to animal psychology. As a result of this conversation Dr. Furness brought for me from Borneo an infant orang outang, between one and two years of age, which we had begun to train as a scientific experiment. I therefore sought to discover what had been accomplished with a closely related species, the chimpanzee.

As I entered the theatre, my feelings were commingled interest and doubt. My doubts were bred from knowledge of the difficulty of judging the intelligence of an animal from a stage performance. So-called educated horses and even educated seals and fleas have made their appeal in large numbers to the credulity of the public. Can any animal below man be educated in the proper sense of the word? Or is the animal mind susceptible of nothing more than a mechanical training, and only given the specious counterfeit of an educated intelligence when under the direct control of the trainer?

My doubts were not allayed by the public announcement claiming that Peter had been "born a monkey and made himself

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[1] Peter is the name of a chimpanzee who is being exhibited on the Keith circuit. The opportunity to study him was obtained through Mr. Barnes of Keith's theatre in Philadelphia, to whom I am indebted for this courtesy. My authority for calling Peter a monkey is Murray's New English Dictionary, which defines the word in its general application as "an animal of any species of the group of mammals closely allied to and resembling man, and ranging from the anthropoid apes to the marmosets."

[2] Dr. William H. Furness, 3d, the explorer, author of "The Home-life of Borneo Head-hunters."

A SATISFACTORY DRINK.

a man." I knew before I entered the theatre that I should be unable to judge from a mere stage performance whether Peter had been in any real sense educated or simply trained to the blind performance of a few tricks. Nevertheless the performance deeply impressed me, as it must anyone, with the expertness of the animal in skating, riding a bicycle, drinking from a tumbler and eating with a fork, threading a needle, lighting and smoking a cigarette. From such mere expertness, however, remarkable as it was and accompanied by very human changes of facial expression, I would

AN ANXIOUS MOMENT.

"DON'T I GET MY DRINK?"

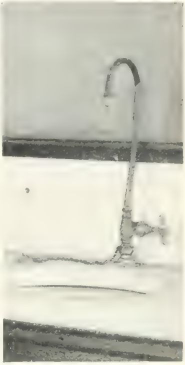
nevertheless hesitate to draw any conclusion as to the animal's intellectual appreciation of what he was doing. Idiots capable of unusual dexterity and possessed of musical or even mathematical ability, yet in other respects markedly subnormal in intelligence, are not unknown. Despite the fact that a high degree of motor training in children implies ordinarily an equivalent intellectual development, I felt inclined to do little more than marvel at an animal who could be trained to such expertness of performance. Every feature of the stage performance might have been carefully planned and any departure from it might, as I thought, have thrown the animal on his own resources and disclosed the limitations of his intelligence.

Yet it must be admitted there were details of the public performance which suggested intelligence. For instance, in riding up an inclined plane and down a small flight of steps, he allowed himself to go very close to the flies, and to save himself put out one hand and cleverly pushed himself away, while still retaining his balance. I also saw him ride as close as possible to the side wall of the stage setting, and take a very short turn with the evident purpose of seeing whether or not he could do it. From time to time I observed that he made the work more difficult for himself than was needful, seemingly out of mere bravado and in pure enjoyment of the task.

Since that day I have seen Peter in five public performances, have tested him at my Psychological Clinic at the University of Pennsylvania, and privately on three occasions. I now believe that in a very real sense the animal is himself giving the stage performance. He knows what he is doing, he delights in it, he varies it from time to time, he understands the succession of tricks which are being called for, he is guided by word of mouth without any signal open or concealed, and the function of his trainer is exercised mainly to steady and control. At one stage performance he reached the top of the incline with insufficient speed to carry him "on even keel" down the steps. He jumped from the wheel, landing on his feet, and when the wheel fell to the floor he quickly picked it up, mounted and dashed up the incline and down the steps successfully. He gave every appearance of possessing determination, courage, and self-directed interest.

I am also prepared to accept the statement of his trainers, Mr. and Mrs. McArdle, that Peter's proficiency is not so much the result of training as of downright self-education. They assert, for example, that a few months ago, when he was brought from England to this country, roller skates were fastened to his feet for the first time. This was done merely for the purpose of keeping him on deck and out of the rigging of the ship. In two days' time he was skating all over the deck. By the time the ship reached New York, he had acquired sufficient expertness to justify them in giving a public exhibition of his skill. They also tell me that he threaded a needle the first time he tried, and furthermore, that they have never taught him to use hammer and nails, screw driver and screws, but that he has picked up their use while playing with them. He unlocks and locks a padlock on the stage, but I am told he can open any lock and is not safe in a room with the door locked, so long as the key is within his reach. Give him time and he will, from a number of keys, select the right one and undo an intricate lock. The difficulty is to restrain him, on the stage and off, rather than to urge him to display his accomplishments. At the Psychological Clinic there was a washstand with running water in an out-of-the-way corner. While I was talking with his trainers, Peter bolted unobserved to the washstand, lifted himself up on his hands, turned on the water, applied his mouth to the spigot, and drank before he was snatched away by his trainers. In these actions Peter showed an intelligent employment of acquired skill, very unlike the mechanical performance of a few carefully prepared tricks.

I hesitated long over the advisability of testing Peter's intelligence at the Psychological Clinic, fearing lest erroneous conclusions might be drawn should it become known that I had presented a chimpanzee to a clinic devoted to the examination of backward and defective children. I assumed that this ape, no matter what grade of intelligence he might show, would be inevitably compared with the human child, and consequently I might be put in the position of claiming for Peter a human intelligence which I hardly thought him to possess.


THE FAUCET WHICH PETER DISCOVERED, OPENED FOR HIMSELF, AND DRANK FROM.

Now, however, that Peter has been tested at the clinic, I no longer fear such imputations, and am willing to assert that it is well nigh impossible to give an adequate account of the intelligence shown by this ape, who cannot be more than five or six years of age, except in terms of comparison with the abilities and disabilities of the human child. Peter not only has more intelligence than any animal hitherto reported in the annals of science,—his intelligence is not in the class of animal intelligence, as we psychologists understand the term. The study of this ape's mind is a subject fit, not for the animal psychologist, but for the child psychologist.

Speculation has at times arisen concerning the existence of a "missing link" between the higher apes and man. Such a "missing link" ought to present an anatomical form intermediate between the highest anthropoid ape and the lowest type of man. This gap has been partly filled by the discovery of the Neanderthal man and the apelike remains found in Java. The chasm between the mind of the highest anthropoids and the mind of man has been held to be not less than the chasm between their structures. This chasm Peter's mind practically bridges. I should hesitate to report the facts disclosed at the Psychological Clinic if my individual testimony were the only evidence. The nature faker is one who accounts for animal behavior in terms of human thought and feeling. From being classed among the nature fakers I shall be saved by the fortunate circumstance that most of the tests which I shall report were made in the presence of a group of over one hundred persons, many of them scientifically interested in the study of animal intelligence, and fully capable of making an independent interpretation of the facts.[3]

On the morning of October ninth Peter skated into the clinic with a breezy rush. He was clad in black cloth trousers, waistcoat, and Tuxedo coat, and wore a starched shirt and collar with a red neckerchief instead of a cravat, which he later pulled off. He had on striped socks and patent leather oxfords, as well as skates, and on his head he wore a small silk hat kept on by elastic. He dashed straight for an open window, which had to be closed immediately. During his stay at the clinic he looked often at the window, apparently interested in the passing cars which he could plainly hear and just catch a glimpse of. His excursion to the window over, he skated about the room, apparently ready to shake hands with the company present. My secretary, who took stenographic notes of all that occurred, bent down and offered her right hand; he took it, and after giving it a shake, put the back of her hand to his lips in the most courtly and gallant manner. Then he skated off, round and round a platform, pursued by Mr. McArdle, turning expertly and dodging with remarkable celerity, from time to time stopping to thump the platform in apparent fun and bravado. He then climbed upon a chair and began to examine a camera with great interest, tried to turn the screws, squeezed the bulb, manipulated the shutter, and felt the bellows. These movements were executed with precision and dispatch, and with no attempt at destructiveness, but rather in a spirit of pure investigation. During his stay at the clinic he skated at intervals about the room, apparently for the sheer love of it. After one test which involved a considerable strain upon his attention his trainer said, "You may now get down and run around and play." He instantly darted off, skating round and round the room, from time to time inciting Mr. McArdle to pursuit by thumping upon the platform.

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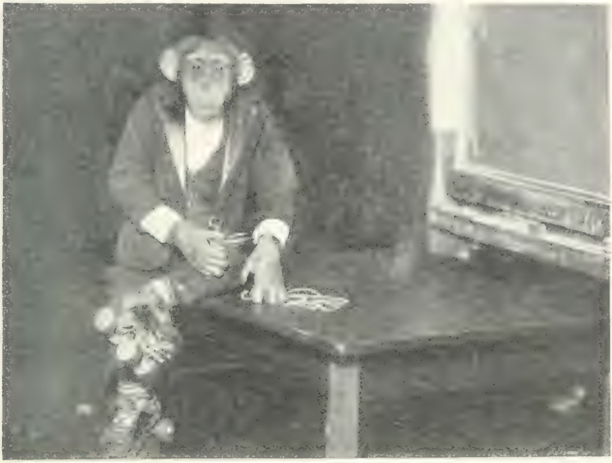
[3] Among those present and close observers of the tests were Drs. Abbott, Donaldson, Furness, Greenman, Holmes, Reichert, Twitmyer, and others.

During the tests he sat upon a small three-legged stool, eight or nine inches high, which was placed upon a low kindergarten table. Being on skates he was thus confined to a small area. He stood and moved about on the table from time to time, never once slipping or losing his balance.



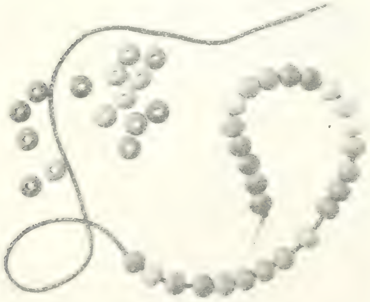
POSING FOR HIS PHOTOGRAPH AT THE PSYCHOLOGICAL CLINIC.

IN HIS RIGHT HAND PETER HOLDS THE PADLOCK USED IN THE STAGE PERFORMANCE, UNDER HIS LEFT HAND IS THE CORD WITH WHICH HE TIES AND UNTIES KNOTS; HE IS SITTING ON A LOW KINDERGARTEN TABLE UPON WHICH HE STOOD TO WRITE ON THE BLACKBOARD. THE ROLLER SKATES KEEP HIM WITHIN REACH AND YET GIVE HIM REASONABLE FREEDOM OF MOVEMENT. HIS POSE IN THIS PICTURE WAS LARGELY SELF-ASSUMED AND HE GAZED STEADILY AT THE CAMERA AS THOUGH COMPREHENDING THAT HE WAS SITTING FOR HIS PORTRAIT.

## *The Cigarette and Match Test.*

The trainer gave him a cigarette and offered him a box of matches. The cigarette was tipped with cork; without hesitation Peter placed the tipped end in his mouth, took a match from the box held out to him, and struck it on a side of the box. I then had the trainer take this cigarette from him and I handed him one of another make with a hollow tube as a mouth piece, which I purposely offered with the wrong end towards him. He at once reversed it and put the tube in his mouth. It was taken from him and again presented in the same fashion. He again turned it. This time he tasted both ends and recognized the tobacco end, either by the sense of taste or touch. I gave him a match from a box of my own and held the smooth top of the box toward him. He rubbed the match twice on the top of the box, then tried to strike the match on the rough side which I was partly covering with my finger. It was difficult for him to find enough surface whereon to strike it, and after one attempt he sought with the head of the match the opposite side of the box, which was either partly or wholly concealed from his view. There can be no doubt that Peter lights and smokes his cigarette as intelligently as a man. While smoking, his poses and facial expressions are very human and assumed without any self-conscious intent.

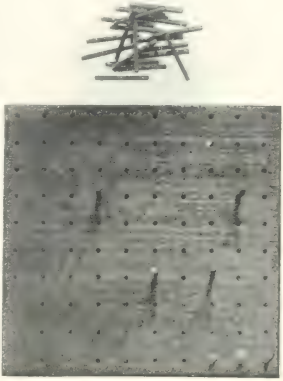
Told to spit by his trainer, he leaned forward and spat on his shoe. The trainer remonstrated with him and told him to spit over the edge of the table. He leaned farther forward and spat on the table. The trainer then passed him a handkerchief and ordered him to wipe the spit off the table. He directed his efforts first to his shoe, but with the same indifference and half attention which a child might show under like circumstances. When he had wiped off his shoe, the trainer pointed to the table and said, "Now off the table," whereupon he reached down and wiped the table clean.



*Stringing Beads.*

I took a shoe string on which had been strung a number of wooden beads, such as are used in kindergartens. This is one of the tests wherewith I determine the intelligence of children brought to the clinic. I held the string and the beads before Peter, and taking a bead from the box, strung it before his eyes and said, "Look, Peter, this is what I want you to do." I repeated this with two other beads; then handing him the string and a bead I said, "Now string one of these for me." The monkey promptly put the bead in his mouth, feeling it with his lips and tongue. The trainer said, "No, no, it's not a cherry," whereupon

Peter took the bead out of his mouth and strung it. I held the box toward him and he took one bead after another from the box, feeling each one first with his lips and seeming to assist himself in this way to get the hole in the bead into the proper position for stringing. When the beads were taken away he clapped his hands as if applauding his achievement. The spectators joined in the applause, and then at the trainer's verbal suggestion he kissed his hand to the ladies. The trainer objected to my making the test so easy, saying I ought merely to have passed him the string and the beads and told him, without demonstrating it, what I wished done.

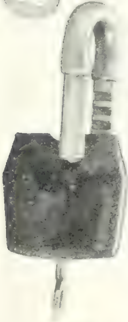


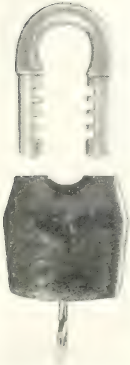
### *The Pegging Board.*

I gave him one of the large pegging boards used in kindergarten work. He immediately passed it over his face. I put three pegs in a row. Peter instantly wanted to pull them out, but stopped when told to let them alone. Then I gave him the pegs one by one, and he put them into the board. He did not place them in a row, as I had done, but irregularly over the board. I am confident, however, that a few trials would suffice to teach him to peg regularly in rows.

### *Opening a Lock.*

At my request the trainer had brought the lock which Peter used in public performances, an old-fashioned padlock with a large key; he is seen holding it in his hand in the photograph of him taken at the clinic. He locked and unlocked this swiftly and without any apparent interest in his work, gazing in the meantime about the room and forced to resume the task from time to time by his trainer. It might have seemed to those who did not know Peter well, that the task was a difficult one and he was being forced to exercise unusual attention to accomplish it. As a matter of fact, the task is too easy to occupy his mind. This was brought out clearly when I offered him a smaller padlock of a different type, one with a bar like a staple, which must be pulled entirely off at the end of the lock opposite the key hole. The key was a small one,





difficult to insert and difficult to turn after it had been inserted. As soon as Peter saw this lock, it absorbed his entire attention. He reached for it and even partly rose from his chair in his eagerness to get it. I unlocked it for him and took out the staple attachment. I put the staple back and locked it, withdrawing the key. I was about to reinsert the key, thinking it too difficult a test to start him with, when he reached for the key, and turning the lock into the correct position, promptly inserted it, and unlocked it more rapidly than I had done a moment before; he then pulled out the staple with a look I cannot but term triumphant, expressing, "There! you see I have done it." I then told him to put the staple back and lock it. He inserted one prong of the staple, but unfortunately had not solved the problem of putting the two prongs in at once. He kept turning the staple around, but it would not go into place. Mrs. McArdle said, "Don't be stupid," and boxed his ears, adding, "That's not right." I then employed a test which demonstrated his intelligence most clearly. Holding the lock before him, I pulled the staple slowly out, moved it several inches away, and reinserted it. I repeated this performance two or three times, and then passed the lock to Peter. He seized it eagerly, slowly and carefully pulled out the staple until it was not more than a quarter of an inch beyond the lock, and then carefully reinserted it in place, shoving it home with a smack of his hand. There could be no doubt that he appreciated the danger of losing the combination and was taking no chances on getting the staple too far away from the body of the lock. He then turned the key in the lock and at my verbal request handed the lock back to me.

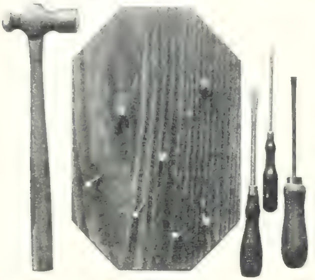
*Opening a Box.*

I brought out a small wooden box with a tiny keyhole. The key was on a ring containing a number of different sized keys. The key which opened the box was the smallest on the ring. I was about to show him the key when the trainer said, "Let Peter pick it out. When he was given the box he turned the keyhole toward him immediately. He then tried the largest key first, holding it momentarily in his mouth. He then tried the next largest, and then a third large one. He did not proceed deliberately to try one key after another until he had found the right one. It must be remembered, however, that he was excited, and the tests were made in rapid succession and with quite a crowd standing close about him. I then opened the box, showing him a few lumps of sugar inside, and pointed out the small key on the ring which opened it. As I was about to close the lid, Peter put his hand on the edge of the box to keep it from being locked again, apparently wishing to investigate its contents. The box was locked, the bunch of keys shaken up and handed to him. He tried to find the small key but without success. The key was shown to him again and he was allowed to put it in his mouth. He then opened the box with the key and obtained a lump of sugar. When the keys were handed to him for a third test, he failed again to find the right key, but his attention was no longer on the work. He wanted to play with the keys. The sugar which I thought would inspire him to open the box lid did not prove to be much of an incentive. A new and difficult problem stimulated him more than sweets.

### *Hammer and Screw Driver.*

While skating about, two or three rubber balls were thrown at him. He picked them up but made no effort to throw them back. When I bounced one on the floor, he seized it and thumped it on the platform, but did not throw it down. He put the rubber balls in his mouth and bit them with an air of satisfaction, probably owing to the fact that his second teeth were just coming through, and his gums ached.

He was brought back to the table and allowed to sit cross-legged upon it. A hammer and a piece of board, on which were some nails and screws, were given him. The hammer had a reversible head, a round one for buffing and a flat one for driving nails. It differed from the hammer which I saw him use at a private interview in Mr. McArdle's room at the theatre, and probably was unlike any he had ever seen. I gave him the hammer in such a way that when he grasped it in his hand he held it in position for striking with the round head. Hesitating a moment, he brought the round head to his mouth, felt it with his lips, turned the head about, felt the flat end, and instantly proceeded to drive several nails into the board with the proper head. He never mistook a screw for a nail. He soon threw down the hammer and jumped to the floor, plainly signifying that he had had enough.



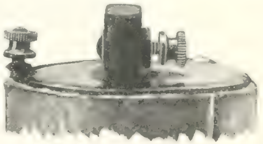
Again he was brought back to the table and given a screw instead of a nail. He stuck the screw into a small hole in the board and at once selected a screw driver, paying no attention whatever to the hammer lying on the table. The screw was a long one and wabbled as he tried to turn it. There were three screw drivers on the table and he first picked out a medium sized one, which was a little too large for the purpose. He next tried the smallest one and made several turns of the screw, always turning the screw driver in the right direction. He did this as a child might do it, or an adult not very expert in handling tools. He used both hands on the screw driver instead of employing one hand to steady the screw.

While hammering in the nails he steadied the nail between two fingers of his left hand, using the hammer with the right hand. Once he pounded one of his fingers, which he instantly put in his mouth, and afterwards exercised great care in hammering the nail, moving his fingers away quickly whenever he brought the hammer head down.

### *Reason or Instinct?*

Perhaps it is only man's self-conceit which inclines him to assume that he is distinguished from the other animals by the possession of reason. He denies reason to the lower animals, and explains their behavior, when remarkable or even intricate, as the result of a blind and invariable instinct. The experiments of the animal psychologists are doubtful on this point, and of relatively small value. An animal confined in some unaccustomed environment and required when half starved and acting under the stimulus of hunger to work his way out of a maze or into some curiously contrived box, can hardly be expected to display the powers of reason which he might employ readily enough to solve equivalent difficulties if he were in a normal environment and better physical condition.

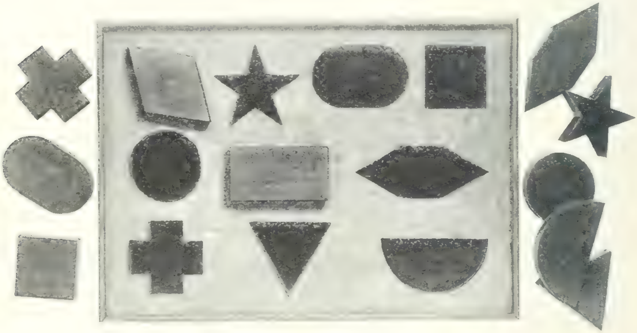
The animal psychologists appear to be discovering that reason plays but a small part in controlling the actions of the lower animals. But the human psychologist in turn is arriving at the conclusion that man, too, reasons very little. When we present a human being with a new problem, his reason may show itself as impotent before the new conditions as is the animal in some cunningly contrived maze. Not more than a month ago a graduate student in my department ruined an electric motor because he went to a great deal of unnecessary trouble in order to attach the conducting wires to a part of the apparatus not intended for that purpose, and overlooked two binding posts which stared him straight in the face on the top of the machine. Another student, a woman, possessed of ample powers of reasoning in her own specialty, was asked to connect a small dry cell with a bell and a key, as an introductory laboratory exercise. The battery has two binding posts, around which the ends of the wire are first twisted, and then a thumb screw projecting from the top is turned so as to push the screw down upon the wire and hold it in place. To test her ingenuity I gave her the battery and the requisite pieces of wire, and said, "Attach one piece of this wire to each binding post of the battery." After working with it half an hour, she reported she could not make the wire stay on. She had been laying the end of the wire on top of the post, and naturally as soon as she left it, it fell off. She had not even sense enough, if I may so express it, to take the wire, bend it near the end, and hang it around the neck of the screw, which would have enabled her to keep it in place and get a current through it. I explained, "You want to bend the end of the wire around the post," and went away and left her with it. After a while I came back to see how she was getting on, and she reported, "Well, it seems to work a little better, but I have trouble in getting it to stay in place." She had bent the wire once about the post, but had still failed to solve the use of the screw which she might have turned once or twice and thus held the wire firmly in place. I had to show her every stage of the process, as I showed



Peter how to string the beads or put pegs in the board. She never acquired facility in the manipulation of apparatus. She lacked what is called "mechanical ability". The impotency of reason when some persons are confronted with a simple mechanical task teaches us as much concerning the ability of man to reason, but no more, than do maze and trap experiments in the laboratory inform us as to the natural intelligence and reasoning of the lower animals.

### *The Form Board.*

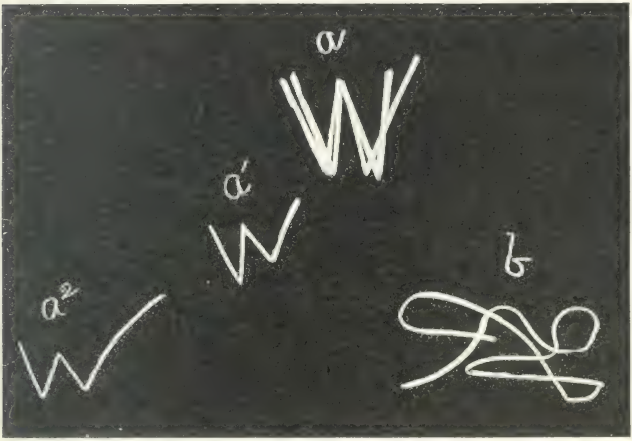
The form board is one of the best tests rapidly to distinguish between the feebleminded and the normal child. To place the various blocks in position with rapidity and precision, requires that the form of the space into which the block is to be inserted shall be associated visually with the form of the block. Peter did not succeed with this test. There was quite a crowd about him at the time, the room was not well lighted, and Peter himself obscured the form board by casting a shadow. It is difficult to see the shallow spaces or grooves into which the blocks are to be fitted, and Peter moreover appears to be near sighted; I have no doubt that he was unable to see clearly and distinctly the spaces let into the board.



A SIMPLE DEVICE FOR TESTING INTELLIGENCE.

MADE IN THE SHOP OF THE PSYCHOLOGICAL LABORATORY AND USED AT THE PSYCHOLOGICAL CLINIC TO DISTINGUISH THE NORMAL AND THE FEEBLE MIND.

This test, however, was a noteworthy illustration of Peter's ability to imitate and perform an action which he supposes to be the one desired. After I had placed two of the blocks in position, I removed one of them, the oblong in the center of the board, and gave it to him; he fitted it in place, and then thrust it home by pounding it down with his fist. But this success was apparently an accident, for when I took the block out and gave it to him again to place in position, he failed as does many a child tested at the Psychological Clinic, shoving the block aimlessly over the board. The trainer then picked it up, placed it in the right groove, and for emphasis struck the board with it twice in rapid succession before handing it to Peter with the words, "That's it, Peter." He immediately took the block and rapped the proper groove twice, exactly imitating her movements, but without trying to make it fit. He then looked up into her face as if proud of what he had done. Now that he had accomplished what he thought was required of him, he seemed to lose all interest in the task, and refused to give his attention to further repetitions of the test. He became excited, jumped to the floor, and skated about in his usual exhilarated manner. His close imitation of the movements of his trainer prepared me for the more remarkable result of the next test.



WRITING ON THE BLACKBOARD.

(A) THE LETTER W DRAWN TWICE, ONE TRACING OVER THE OTHER; (B) A SCRAWL FOLLOWING THE FIRST TRACING; $A^1$, PETER'S COPY AFTER THE SECOND TRACING; $A^2$, PETER'S SECOND EFFORT WHEN TOLD TO MAKE A W AGAIN.*

### *The Writing Test.*

I drew forward a blackboard, the writing surface of which he could easily reach when standing upon the table. He took a piece

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*Drawn and photographed by Dr. E. B. Twitmyer, to whom I am indebted for the other photographs used in this article, except those of **Peter which were made by W. H. Rau.**

of chalk eagerly, and before I had made any mark upon the board, began to scrawl in a corner of it. I took the chalk from him and said, "Peter, I want you to do this," and rapidly made the letter W in four strokes. Peter's attention had not been fully given while I made the letter. He took the chalk and scrawled beneath in much the same manner as he had done before. I picked up another piece of chalk and said, "Now look, this is what I want you to do," and traced another W over the one which I had just drawn. Peter watched the operation intently, then with the chalk in his hand, he quickly made the four movements and drew a fairly perfect letter beneath the W which I had traced. After a brief interruption due to the excitement of the spectators at this performance, Peter's interest in the board still remaining as appeared from his continued scrawling, I asked him to try again, and he made at some distance from the first letter another W, somewhat less perfectly formed.

From his general behavior, and especially from his manner of executing this test, I believe that Peter is what the psychologist calls "motor minded". He imitated the movements of my writing hand. I doubt whether he could copy a W on the board if he had not first seen me make it. In this, however, he does not differ from the child whose writing usually begins as an imitation of movements, and only becomes secondarily a copying of the visual form.

### *Articulation.*

Peter is able to articulate the word "mama". He does this apparently with great effort, and it is the one task which he performs with seeming unwillingness. At the Psychological Clinic, and also at the private examinations, a tumbler of water was employed to force him to this effort. He seemed always ready for a drink. Mrs. McArdle would hold a tumbler of water in her hand and order him to say "mama". He would make many efforts without succeeding. The trainer would then say, "Well, I am going away," and make a feint of starting. At this Peter always became much distressed, whimpered, and at the clinic fairly wrung his hands. The trainer would turn back and say, "Now will you say 'mama'?" He would then make a very evident effort, and always succeeded in saying fairly distinctly, "mama". At the clinic, she pretended to be dissatisfied with his first effort, and asked Mr. McArdle if he thought it was good enough. Mr. McArdle shook his head, and Mrs. McArdle then turned to Peter with, "He says it's not good enough, Peter, try again." Peter tried again and articulated "mama" with great distinctness. He was then given a drink, and said "mama" several times. The articulation of the *m* sound is perfect. I am somewhat doubtful whether the *ah* is voiced or not. It seems to be usually a vowel produced by an inspiration, possibly at times an expiration, of the breath without bringing the larynx into action. He uttered the word in a loud whisper, rather than with voiced articulation. During one test, however, I thought I heard more than once a distinct, high-pitched, voiced vowel, sounding more like *ah-ee* than *ah-aa.*

A DIGNIFIED PLEADER.

PETER'S EXPRESSION AND POSE SUGGEST THE AFTER-DINNER SPEAKER. HE IS PROBABLY ASKING FOR A DRINK OF WATER OR SOMETHING TO EAT.

Peter's chief fault is one I have found occasionally in young children showing an arrest of speech development. He tries to speak with the inspired and not with the expired breath. At a private examination I taught Peter to articulate the sound of *p* with the expired breath. I am confident from his behavior as well as from what his trainers told me, that he had never before been practiced in this. I first obtained the proper position of the lips by getting him to blow out a match, which he could do readily enough. I then blew into Peter's face and he blew into mine. I made the puffs shorter and the action of the lips more vigorous until I was saying *peh-peh* with breath but without voice. Peter imitated this exactly, using no voice but a breathed, *i. e.* whispered, *peh-peh* sound. To accomplish this took but five minutes. I tried him with no other articulated elements, as this experiment was enough to convince me that Peter can be taught to articulate a number of consonantal sounds and probably to voice correctly some of the vowels.

### *Comprehension of Language.*

When Peter is asked, "Where is Mama?" he points to Mrs. McArdle. When asked, "Where's Dada?" he points to Mr. McArdle. When asked, "Where's Peter?" he taps his shirt front.

At the clinic he tried once to jump down from the table and run away. The trainer cuffed him over the ears because he was naughty, and said, "Now beg pardon." She whispered in his ear for a second, while he listened penitently and with that exaggeration of rapt attention which may be seen on the face of any child in whose ear we whisper. "Kiss Mama," she then said, and he turned his face toward her and did it like a child. "Kiss Dada," and he leaned over and kissed Mr. McArdle. "Now Peter, hit Dada," and he slapped Mr. McArdle two or three times with his hands. All this was done without any observable gestures being made by the trainers, simply in obedience to spoken commands which were instantly carried out, without waiting for any other signal.

While drinking from a tumbler the trainer said, "Give Mama a drink," and he extended the tumbler to her and held it while she drank. When she said, "Give Dada a drink," he held it for Mr. McArdle in the same way. "Now aren't you going to give the Doctor a drink?" turning towards me. Peter promptly handed me the tumbler, all the more willingly perhaps because no water remained in it. When I passed the tumbler back to him, he took it readily.

During a private examination, Mrs. McArdle showed Peter a scratch on her finger, and said, "Oh, Peter, it hurts," with the sharp indrawing of the breath which is customarily used to express pain. Peter looked at the hand with an expression of human sympathy. "Now kiss it, Peter, and make it well," without a gesture of any sort. Peter leaned forward, put his lips to the spot and kissed it.

### *The Interpretation.*

The ascent of man to higher levels of intellectual attainment has been conditioned by the discovery and use of tools. From the first use of the club, on through the invention of one weapon of offense and defense after another, down to the modern aerial warship, man supplanted brute force with the force of intellect and thereby made intellectual achievement a controlling factor in natural selection and survival. His discovery and use of fire carried him far beyond the merely animal intellect and made possible human civilization and culture. Steam and electricity have initiated a new era of intellectual development.

A tool may be the product of organic evolution. The foot, the hand, the binocular eye, these are all instruments with which man is better equipped than any of the lower animals. Of no small importance, also, was the acquisition of right-handedness, the development of a dextrous or preferred member for the execution of the more intricate manual operations. Last in order but not least in importance is the development of that faculty which most serves to distinguish man from the lower animals, and which has been and remains his chief instrument for the acquisition of power whether by the individual or the race. It is the possession of an articulated language, the peculiar tool of the intellect, employed to convey and even to develop thought, which has made man what he is and raised him to such heights above the mere animal. Reason develops from many sources but chiefly on foundations which are built upon the use of language. Reason may appear as an attribute of the animal mind, but in the absence of language its manifestations must remain so insignificant as to be practically negligible in comparison with its varied employment by man.

Considering his age and opportunities, Peter reasons well enough within the range of his understanding and activities. He can use a club; he can use even a hammer. He knows the use of fire, and can strike a match and light a cigarette. There are indications that he is right-handed. Right-handedness is resident within the brain. It is the manifestation of a superior functional use of one side of the brain. Speech also is dependent upon a congenital physiological function of the brain. The human child comes into the world with a brain ready to initiate speech when the proper stimuli act upon it, just as he comes fully equipped to breathe and cry. A child is encouraged to talk, but is no more taught to talk than a bird is taught to fly. It would be more difficult to keep him from talking in his normal environment than it is to induce him to talk. Peter shows every sign of failing to possess this natural faculty. What might have happened if from his birth he had associated freely with human beings and if he now associated with them as children do, it is impossible to say. But until such an experiment is made we must believe that a chimpanzee is born without the instinct or physiological faculty of speech.

Could he nevertheless be taught to talk? There are children of five, six, or even older who have never talked. Deafness and sometimes even adenoids and enlarged tonsils will cause an arrest of the development of speech. The deaf child need no longer be mute, because the methods are now known by which he may be taught without hearing the sounds to move the organs of speech into the proper position for their articulation. Where adenoids or enlarged tonsils have caused an arrest of speech development and have not been removed till late in the child's life there is often unusual difficulty in acquiring articulate language. If a child without language were brought to me and on the first trial had learned to articulate the sound of *p* as readily as Peter did, I should express the opinion that he could be taught most of the elements of articulate language within six months' time.

The results of the writing test, during which Peter's imitative capacity enabled him to form the letter W, justify the opinion that he could be taught to write at least a few words after a year of training. There can be no doubt that to some extent he already understands spoken language. The mere possibility of acquiring the three modes of language, *i. e.*, articulation, hearing, writing, and let us add, reading, does not suffice, however, to indicate that he could be taught to employ language as the human being employs it. Helen Keller tells how she first grasped the idea that certain touches upon the palm of her hand were the name of the object water. Peter has already reached the stage where he comprehends, even though it be only to a limited extent, that certain sounds are the names of objects. If he can be made to comprehend that certain symbols traced upon the board represent these sounds and are also the names of objects, and if he can also be taught to articulate these symbols, then he will be prepared, as the child is, to use speech as the staff by whose aid he may climb the pathway of intellectual development.

While my tests of Peter give no positive assurance that he can acquire language, on the other hand they yield no proof that he cannot. If Peter had a human form and were brought to me as a backward child and this child responded to my tests as creditably as Peter did, I should unhesitatingly say that I could teach him to speak, to write, and to read, within a year's time. But Peter has not a human form, and what limitations his ape's brain may disclose after a persistent effort to educate him, it is impossible to foretell. His behavior, however, is sufficiently intelligent to make this educational experiment well worth the expenditure of time and effort.

The ability to talk, to write, and to read is a prerequisite for the intellectual development of a child. They do not, however, assure us that such intellectual development will take place. Many a child is able to perform these tasks more or less mechanically without being able to employ them as the instruments of an education. Such a child remains in the mental status of a low or middle grade imbecile. We grade children with respect to their ability to develop in the peculiarly human way. If we judge Peter in this fashion, it must be acknowledged that there is no evidence that Peter could rise above the level of a low grade imbecile, though his behavior suggests that he could attain the level of at least the middle grade imbecile. Above the middle grade imbecile is the high grade imbecile, capable of acquiring much of the education that a normal child receives in arithmetic, history, geography, but incapable of exercising normal mental activity in free association with his fellows. To predict the outcome of the educational process with a normal child is often a hazardous proceeding. To do this with certainty for a defective child requires usually some associated physical symptoms, a malformed or under-sized head, for example. It has been my experience that some children present the appearance of a limited capacity for mental development, owing perhaps to a malformed head or other physical stigma, who yet are capable of a surprising development which contradicts the original diagnosis. If in such cases there is reason for holding our final judgment in suspense until a satisfactory educational experiment is undertaken, so it would be unfair to Peter to define the natural limits of his mental development until a consistent effort has been made to educate him. With our present knowledge of the mental quality of the anthropoid apes, however, it would be safe to say that Peter is very unlikely to understand and acquire the recognized subjects of the school curriculum.

Peter's age and life history have naturally an important bearing on his possibilities of development. I know nothing of Peter's origin excepting that he probably came from the west coast of Africa and the McArdles say they have had him under training for two and a half years. They think he was three or four years old when they got him, but they have not informed me how they obtained him nor do I know whether he is male or female. I only know that he is called Peter. He certainly has not from birth been subjected to the educational and formative treatment of the human child. Much of his time is passed locked up in a box. His environment is of necessity extremely limited, and before the McArdles got him his life was probably that of an animal in strict confinement, excepting for the brief period of infancy before his capture. His training has been mostly directed to the performance of tricks on the stage. Peter has therefore not only his birth to contend against, but also his bringing up.

Fortunately his age can be determined within somewhat narrow limits. When I first saw him at a private interview, Monday, October 4, 1909, he had lost one and was just losing the second of his two temporary central upper incisors. When I last saw him, one of the permanent central upper incisors was wholly through, projecting about an eighth of an inch and the other was just showing. A child gets his permanent or second teeth at about the age of seven years. Peter's physiological age is therefore about the same as that of a seven-year-old child. This does not determine, however, the number of years Peter has lived. A chimpanzee's life is supposed to be shorter than man's. If the chimpanzee lives to be about thirty years of age, he probably acquires his permanent teeth at four years. If, however, the chimpanzee averages more than thirty years, the permanent teeth may be acquired later. Peter is certainly not less than four nor more than seven, and probably is in his sixth year. His mental life is therefore measured by not more than five or six years; in physiological development he is at the stage of a seven-year-old child. This ape equals if he does not exceed what is known of the average child of six or seven in his ability to skate, to ride a bicycle, to tie a knot, and he executes other movements requiring a high degree of coördination and motor development. In view of the treatment to which he has been subjected, Peter within the limited sphere of his activities is precocious in comparison with the normal child. In imitative capacity also he is the equal if not the superior of many a child of his own age. In language and in the peculiarly human sphere of activities he about equals a child in its second year. As time goes on, the natural process of development will undoubtedly increase the distance between Peter and the child.

### *Personality.*

Peter is a downright engaging personality. He possesses energy, initiative, and a fair amount of persistence. His constant activity impresses itself upon the spectator like the grace of an accomplished dancer. He is vital, the most mobile individual I have probably ever seen. Apathy is the most hopeless and least attractive characteristic of child or animal. The active child who will do things, however objectionable they may be to his elders, engages our interest and can be developed. Peter's activity is not the result of mere animal spirits; he is mentally alert and possessed of unusual power of concentration, not merely for an animal but for a child of his own age. He exhibited at the clinic the exuberant vivacity of an obstreperous boy. On the stage he performs difficult feats in skating or bicycling with nonchalance and seeming indifference to the possibility of failure. Left to himself he will usually seek some sort of occupation.

The play of interest and emotion can be read upon his face as readily as, I was about to say, upon that of a human being. The six illustrations in this article give some idea of the human changes in his expression. At the Psychological Clinic he posed himself to be photographed, and his pose in a human being would be called dignified, unconstrained and alert. At the flare of the calcium light he fell back and threw his hand up as though to protect his head from a blow, but showed his courage by remaining seated and watching with intent interest the cloud of smoke. In giving his trainer a light from his cigarette his expressions are those we often see on the faces of our friends under like circumstances, and the two expressions are quite dissimilar. His expression in the picture on the third page of this article is one of inquiry, protest and distress; when his distress increases, if for example he is long deprived of a drink, the lips protrude in a pitiful but to us ridiculous pout, he then begins a curious gruff whimper, and eventually may even wring his hands. He does not laugh, to be sure, but at times he has something very like a momentary grin of humor, albeit ghastly because of the cavernous mouth and huge jaw.

He is affectionate and demonstrative. In playing about the room during a private examination, while I was talking with his trainers, he amused himself with one occupation or another, coming up reassuringly to me from time to time to take hold of my hand. Once while I was seated on a box talking with his trainers, he jumped up beside me and put his arm confidingly on my shoulder, sitting quietly thus for many minutes. His behavior at every private interview was more remarkable than on the stage. Given a tumbler of water to drink while sitting on his box, he emptied the glass and then in a quite indifferent manner, barely turning his head, reached far out to one side and partly behind him and placed the tumbler on a shelf. Many a child would have thrown it on the floor. Happening to find a cigarette on the floor he picked it up while we were paying no attention to him, struck a match, lit the cigarette and after a few puffs reached back and laid it down beside the tumbler.

It would be hazardous to conclude from Peter's demonstration of affection or his general behavior that he would be susceptible to moral training. He responds to verbal commands, but he is only to a very limited extent submissive to the kind of discipline which we think appropriate for the child. A whip is still the constant incentive to good behavior. He is the aboriginal, primeval truant. When taken abroad, roller skates are put on his feet to keep him from escaping. When placed in the automobile after leaving the clinic, he was out over the other side in an instant, scurrying across the lawn as rapidly as his skates would permit. Nevertheless, his trainers assert that they brought him back not by forcible capture but by holding a pocket handkerchief to their eyes and calling out that they were going to leave him.

While there can be no doubt from Peter's examination that there is in him the basis for something like moral discipline and training, it is not to be expected that he could ever reach that stage of development where moral character begins in recognition of the difference between right and wrong. Even though we may grant a fair prospect in the direction of intellectual development, we must assume from our present knowledge of men and apes that Peter is and will remain morally imbecile. It would be a nightmare flight of the imagination to suppose that an ape could acquire a will determined consciously by moral motives.

### *A Genius among Apes.*

Is Peter the one genius among apes? The McArdles believe that he is. They have trained others, they say, and they maintain that in their experience he far exceeds any other chimpanzee in initiative, courage and tenacity of purpose. The attitude of the McArdles toward Peter is no less noteworthy than Peter himself. They are naturally interested in his performance as a valuable financial asset, but more than this they show in their relationship towards him the attitude of fond parents towards an infant prodigy. They claim that no one really knows how intelligent Peter is and they appear to believe that Peter excels the human being in quickness of action, thought and comprehension. If they are right, Peter should become the ward of science and be subjected to proper educational influences. He has been trained, he is partly educated, but no effort has yet been made to give him what an education really stands for. I venture to predict that within a few years chimpanzees will be taken early in life and subjected for purposes of scientific investigation to a course of procedure more closely resembling that which is accorded the human child.

# SIZE OF CLASSES AND SCHOOL PROGRESS.

By Oliver P. Cornman, Ph.D.,
*Associate Superintendent of Public Schools of Philadelphia.*

In discussions of the conditions affecting the progress of children in school it is generally assumed that classes beyond a certain size are a serious menace to the pupils' success. For example, it is stated by Dutton and Snedden, "In the Elementary Schools of the United States it has come to be felt that if the number of children assigned to a teacher is in excess of 40 the work must suffer."[1] It has been taken for granted, therefore, that large classes are to be counted among the important causes of retardation and, conversely, that much better results are secured with classes small in size. Such assumptions as these are quite natural. Indeed, it seems almost self-evident that a teacher would do better work with a class of 30 than with one of 40, and that the adverse conditions to be met with in a class of 50 or more pupils must surely be reflected in a marked deterioration in results, if not in complete failure. This view of the relation of the size of the class to the efficiency of the teaching is held so strongly, that the demand for smaller classes is practically universal, and many school superintendents are concentrating their attention upon the problem of reducing the size of their classes from, say, 40 to 50 pupils per teacher to classes ranging from 30 to 40. But the number of pupils per teacher can be reduced only by employing more teachers, so that the question becomes an important one from the economic point of view. For this reason, and also for the pedagogical interest inherent in the problem, the influence of the size of class upon the progress of the pupils is worthy of careful inestigation.

A method by which such investigation may be made is to examine the relation of the size of the class to promotion percentages, the latter constituting a convenient measure of rate of progress. This method was employed with the promotion records for January, 1909, of the schools of District No. 6, Philadelphia. The classes were arranged according to size in three groups: "under 40," "40 to 49," and "50 or over" and the promotion percentages determined for each group. The results are given in table I, for each grade separately, for grammar grades (5th to 8th) and for primary grades (1st to 4th) taken together, and for the totals of all the groups. The last line of this table shows that

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[1] *Dutton, S. T., and Snedden, D. S.*, Administration of Public Education in the United States, N. Y., Macmillan, 1908, p. 341.

### TABLE I.

PROMOTION PERCENTAGES, JANUARY, 1909.

*Classes Grouped by Size.*

| Grade. | Under 40. | | | 40 to 49 | | | 50 or Over. | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. of Classes. | Av. No. Pupils. | Promoted. | No. of Classes. | Av. No. Pupils. | Promoted. | No. of Classes. | Av. No. Pupils. | Promoted. |
| 8 | 9 | 34 | 89.2 | 7½ | 44 | 90.0 | 0 | 0 | .0 |
| 7 | 10 | 36 | 84.9 | 8½ | 45 | 91.9 | 4 | 51 | 92.1 |
| 6 | 9 | 30 | 86.4 | 19 | 45 | 84.1 | 4 | 52 | 89.4 |
| 5 | 11 | 36 | 83.4 | 25 | 45 | 87.3 | 5 | 54 | 87.0 |
| 4 | 8 | 38 | 81.2 | 33½ | 45 | 84.2 | 4 | 52 | 84.6 |
| 3 | 11 | 36 | 87.9 | 28 | 45 | 84.6 | 12 | 53 | 80.8 |
| 2 | 13 | 36 | 79.4 | 32½ | 44 | 85.1 | 9 | 53 | 74.2 |
| 1 | 12 | 36 | 76.0 | 22 | 46 | 76.4 | 23 | 54 | 76.7 |
| Gram. | 39 | 36 | 85.8 | 60 | 45 | 87.3 | 13 | 53 | 89.3 |
| Prim'y | 44 | 36 | 80.9 | 116 | 45 | 83.0 | 48 | 53 | 77.9 |
| Total | 83 | 36 | 83.2 | 176 | 45 | 84.5 | 61 | 53 | 80.3 |

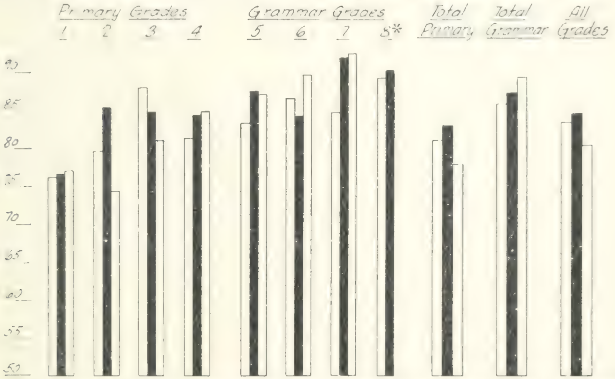

CHART I. Showing promotion percentages of classes. Small classes are on the left, large classes on the right, of the medium-sized (shaded) classes.

*There were no classes of the "50 or over" group in the eighth grade.

there were 83 of the "under 40" classes with an average membership of 36 and that 83.2 per cent of the pupils in these classes were promoted; that the "40 to 49" group consisted of 176 classes with an average membership of 45 and a promotion record of 84.5 per cent; and that 61 classes with an average membership of 53 had a promotion record of 80.3 per cent. The highest promotion record,

TABLE II.

RATING OF PUPILS, FEBRUARY, 1909.

PER CENT "SATISFACTORY" IN SCHOOL WORK.

*Classes Grouped by Size.*

| Grade. | Under 40. | 40 to 49. | 50 or Over. |
|---|---|---|---|
| 8 | 61 | 59 | 66 |
| 7 | 67 | 60 | 72 |
| 6 | 55 | 61 | 64 |
| 5 | 57 | 68 | 61 |
| 4 | 70 | 69 | 68 |
| 3 | 72 | 69 | 72 |
| 2 | 60 | 69 | 75 |
| 1 | 73 | 76 | 56 |
| Grammar | 59 | 61 | 65 |
| Primary | 71 | 69 | 70 |
| Total | 64 | 69 | 67 |

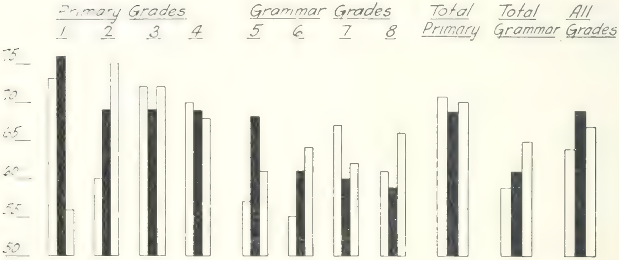

CHART II. Showing percentages of pupils rated as making satisfactory progress in small, medium sized, and large classes respectively.

therefore, was made by the classes of medium size and the record of the group of "50 or over" was but 2.9 per cent below that of the "under 40" group. Similar comparisons may be made for each grade separately or for the grammar grades or primary grades taken together. Some of the facts of table I are given in chart I in order to facilitate such comparisons. Examination of this chart discloses that in the 1st, 4th, 6th and 7th grades and in the grammar grades as a whole the best promotion records were made by the largest (50 or more) classes; that in the 2d, 5th, and 8th grades, in the primary grades as a whole and in all the grades taken together, the medium-sized classes had the best promotion records; and that in only one grade, the 3d, did the smallest classes have the best record. The chart also shows that for the 1st, 4th, 7th, and 8th grades and for the grammar grades taken together

### TABLE III.

Rating of Pupils, February, 1909.

PER CENT "SATISFACTORY" IN CONDUCT.

*Classes Grouped by Size.*

| Grade. | Under 40. | 40 to 49. | 50 or Over. |
|---|---|---|---|
| 8 | 80 | 85 | 96 |
| 7 | 76 | 85 | 80 |
| 6 | 66 | 84 | 83 |
| 5 | 78 | 80 | 82 |
| 4 | 89 | 78 | 89 |
| 3 | 88 | 78 | 90 |
| 2 | 89 | 80 | 86 |
| 1 | 90 | 85 | 87 |
| Grammar | 77 | 85 | 87 |
| Primary | 89 | 79 | 90 |
| Total | 84 | 79 | 90 |

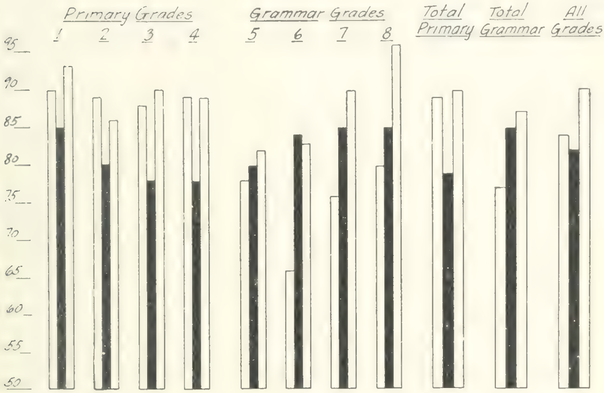

Chart III. Showing percentages of pupils rated as satisfactory in conduct in small, medium sized, and large classes respectively.

the promotion percentages for small, medium, and large size classes increase in the order given, or, as it may otherwise be expressed, the larger the class the better the record. In general, it may be said (*a*) that careful scrutiny of the facts of table I or their graphic representation, chart I, fails to reveal any advantage in small classes over classes of medium size as regards promotion percentages; (*b*) that the classes of medium size make, on the whole, the best showing; (*c*) that the large classes do not, on the whole, fall much below the other groups; (*d*) that in the grammar grades, the larger the class the better the promotion record.

To secure additional data upon the relation of size of class to rate of progress, the monthly report cards (for February, 1909) upon which the teacher records her rating of the pupil's conduct or deportment and his progress in school-work were utilized. The percentage of the pupils of a class rated as making satisfactory progress was determined and the classes were then arranged in groups according to size. The results are given in table II and displayed graphically in chart II.

Examination of this chart shows that in the 2d, 6th and 8th grades, and in the grammar grades taken together, the largest classes make the best showing; that in the 1st and 5th grades and in the total for all grades the medium sized classes have the best record; and that in the 4th and 7th grades and in the primary grades taken together the smallest classes have the highest ratings. On the whole, the pupils of the medium size classes have the best ratings and those of the smallest classes the poorest, while again, in the case of the grammar grades, the larger the class the better the rating.

Discussion of these results in a meeting of school principals gave rise to the suggestion that the comparatively poor records of the smaller classes might be compensated for by a "moral gain" which could not readily be measured. In order to attempt some measurement of the "moral gain," the monthly report ratings for "conduct" were also tabulated. The results are given in table III and in chart III. The chart shows clearly that the percentage of pupils rated as satisfactory in conduct is greatest in the largest classes, whether we group the classes by primary grades, by grammar grades or consider the entire number of classes without regard to grade: and again in the grammar grades, the larger the class the better the result. The pupils of the classes of medium size are not rated so high in conduct as those of the small and of the large classes.

A review of charts I, II and III seems to indicate (*a*) that size of class is not a very important factor in the determination of rate of progress or retardation of the pupils of the class, (*b*) that medium size classes (40 to 49 pupils) make somewhat the best showing, (*c*) that large classes (50 or more pupils) make a poorer showing in primary than in grammar grades, and—as a corollary of (*c*)—(*d*) that it is more important to have small classes in the primary than in the grammar grades. The usual practice, however, is to overcrowd primary classes while grammar classes are relatively small. This is shown in table IV, the data for which were obtained from the Annual Report of the Superintendent of Public Schools of Philadelphia for the year 1908.

TABLE IV.

ANNUAL REPORT, 1908.

| Grade. | Average No. of Pupils per Teacher. |
|---|---|
| 8 | 35.5 |
| 7 | 40.1 |
| 6 | 42.9 |
| 5 | 45.1 |
| 4 | 43.7 |
| 3 | 44.4 |
| 2 | 46.1 |
| 1 | 48.1 |
| Grammar | 42.0 |
| Primary | 45.7 |
| All grades | 44.5 |

It should be borne in mind that the data upon which this study is based include results from only about a score of schools and some 300 classes. Perhaps different results would be obtained if the investigation were widened to take in all the schools of the city. The problem is of sufficient economical and pedagogical importance to warrant further study of it, and it is hoped that careful and extensive investigation will be made.

Even if such investigation should bear out the conclusions of the present study, it would not necessarily mean that large classes are to be desired. It may be that better results are not obtained with small classes because the teachers have become so accustomed to dealing with the larger classes that they are not able when they meet the small class to adjust themselves and adapt their methods to it. Some evidence in favor of this view is found in the preference held by many teachers for classes in the forties. "I feel as if I do not have enough to work upon in a class of thirty," is the way this preference is often given expression. Again it may be that the pupil does not reap the advantages supposed to accrue to him in small classes unless the class becomes *so* small that the teacher may direct a large share of attention to the study of the individual peculuiarities of her pupils and to the employment of special methods in each child's behalf. The possibility of realizing these conditions is found only in the "special class" of from 15 to 25 pupils. As was said editorially in a former number of THE PSYCHOLOGICAL CLINIC, "The grade teacher is interested in teaching reading, writing and arithmetic. The special teacher must be interested in developing the individual child. . . . In the grades attention must ever be centered upon the curriculum, pedagogical methods and the result as shown through class promotions. There is a problem of mass instruction, and there is an entirely different problem of individual development. These should be kept separate and distinct, and the public schools should never give up the older ideals of mass instruction. Clinical psychology and the special teacher will not supplant the more general features of the public school; they will only supplement what is already to be found in the schools, in order to make the work effective in meeting special conditions."[2] The cost of reducing regular classes to an average size of even 30 pupils would be so great as to be practically prohibitive, so that the public schools could not if they would "give up the older ideals of mass instruction." Perhaps the most economical, as well as most effective, solution of the problem is the maintenance of regular classes of medium size—between 40 and 50 pupils—the gradation of which classes shall have been greatly improved by transferring from them to special classes—15 to 25 in membership—for individual pedagogical treatment all pupils who seriously deviate in their physical, mental, or moral characteristics from the average or normal child.

[2] Vol. III, No. 2, p. 30, April, 1909.

## REVIEWS AND CRITICISM.

*Social Service and the Art of Healing.* By Richard C. Cabot, M.D.
New York: Moffat, Yard & Co., 1909.

Dr. Cabot's book is dedicated to the social workers of the Massachusetts General Hospital, and it is the wide possibilities which are being opened to the social worker, which engages much of Dr. Cabot's attention. His central theme, however, is team work, of doctor and social worker, and of doctor and patient.

In the first and last chapters Dr. Cabot points out the absentmindedness, even the partial blindness of the busy hospital physician. "What is there in the waiting-room?" he asks. "A pretty good lot of material," his assistant replies briskly. "There's a couple of good hearts, a big liver with jaundice, a floating kidney, three pernicious anemias, and a flat foot." With this varied collection awaiting him the doctor has little time to see anything but the foreground of the picture, the immediate physical need. Dr. Cabot believes that it is necessary for the physician to see the background too, not only to diagnose the disease and prescribe the remedy, but also to find the underlying cause and root it out. This he cannot do without the help of the social worker, and in order to help him properly, she must be adequately trained.

Social work as a profession is new. Dr. Cabot says, "Philanthropy and Charity were its poor but honest parents." He defines the function of the social worker, not as friend ("friends are not made in a day or a month"), not as neighbor, though both are sometimes possible, but as expert. And the essence and center of social work, corresponding to diagnosis and treatment in the science of medicine, is, in Dr. Cabot's opinion, "the study of character and of the influences that mold it for good or ill." One of the strongest influences of course is poverty,—poverty, which Dr. Cabot says is "to social work as pain is to medical work."

As to the question whether it is possible to teach this psychical diagnosis and treatment, Dr. Cabot believes it is, and he very practically maps out for the student the kind of book on character study which could be written and could form the basis for lectures. In default of proper teacher and text books, Dr. Cabot makes valuable suggestions of books to be read and conditions to be studied.

Dr. Cabot sees no reason why social work should be confined to the poor. Once thoroughly equipped and recognized as an expert, he thinks the social worker should have office hours, a private practice, and be consulted "in all sorts of moral and domestic difficulties, by parents of difficult children, and by children of difficult parents," etc. He adds with a solemnity which we feel must conceal a smile, that his own most intimate knowledge of the topic has been gained from the work done on him by his wife, and he believes "the understanding and molding of faulty character is possible," because he has "experienced it in the hands of an expert." Apparently another case of "what every woman knows," but with the man fully conscious of his indebtedness.

Team work between the educator, the doctor, the social worker, and the patient,—this is the keynote of Dr. Cabot's book. He objects to Professor Munsterberg's plea in "Psychotherapy" for armed neutrality, believing that no such sharp boundaries can be maintained. He points out the changes in the medical profession and in the professions of social work and teaching in the last ten years, and shows the increasing evidence of their interpenetration and closer coöperation.

To get the best team work between doctor and patient, Dr. Cabot believes means the elimination of all lying. He offers many examples to prove his contention that there is no circumstance which can arise between doctor and patient where the truth is not preferable to a lie. It seems to us that here Dr. Cabot is a trifle fanatical, believing as he does that even if one can save a life by a lie, it is better to tell the truth and sacrifice one life rather than turn a lie loose on society. It looks as if Dr. Cabot's domesticated social worker had omitted to point out through a course on Ibsen and other modern ethical writers, how dangerous it is to have hide-bound rules of morality, and how necessary it is to judge each separate case on its individual merits, with a mind unprejudiced even by high ideals. Dr. Cabot's idealism leads him also to make the astonishing statement, "Very few Americans like to lie." If nations differ at all morally, which seems very doubtful, on what grounds, I wonder, are we Americans picked out for this special encomium? Is it the subconscious influence of George Washington and the cherry tree?

This, however, is only a small part of a most interesting and helpful book, one which shows not only the value of individual work, but reveals an endless chain of team work, which if effectually carried out might link the whole world in brotherhood. E. R. W.

## NEWS AND COMMENT.

### *Is Anything Wrong with the Public Evening Schools?*

Evidently the International Committee of Young Men's Christian Associations think that there is, for they put the question to the public in a circular, which they have just distributed. They quote the statement of Dr. Thomas M. Balliet, Dean of the School of Pedagogy of the New York University, and former superintendent of schools at Springfield, Mass., who says, "The whole system of public evening schools must be reconstructed at an early date."

They further quote from an address made by Dr. Balliett about a year ago, "I confess I was much puzzled some years ago, when I was superintendent of schools in Springfield, to find that, in spite of all our efforts to improve the evening schools, including a good trade school and classes in mechanical drawing that were well taught, a goodly number of men, instead of accepting the free tuition of the city, would go to the Young Men's Christian Association classes and pay for their instruction. I have made considerable investigation as to why men should perfer to pay for instruction rather than receive it free in the public evening school. Some of the reasons which I have ascertained and which no doubt explain in part this preference, are the following:

"First: Instruction in evening schools usually draws a large number of people who are relatively young—that is, boys from fourteen and fifteen up to twenty-five years; mechanics who may perhaps have some reputation in their trade and who wish to perfect themselves in certain technical lines, do not wish to be grouped with boys of that age; they feel that such boys, having come recently from the public schools, are likely to answer some questions better than they can themselves; they may be able to use English better and appear to better advantage. Mature men are often sensitive about the comparisons which the younger members of the class are apt to make at their expense.

"Second: Some men who hold fairly good positions as skilled workmen, prefer not to have it known among their fellow workmen that they are obliged to attend school to fit themselves more perfectly for their work. In the Young Men's Christian Association classes, in some cities at least, they are often treated almost as private students, and are given a degree of individual help which is impossible to give in the large classes of the public evening schools, conducted at public expense.

"Third: The public evening schools usually aim at teaching a subject quite systematically and are modeled (possibly too much) after the day schools. Men have intensely practical aims when they come to an evening school, and are unwilling to study systematically an entire subject; they demand that the instruction shall lead directly to the specific things which they want to know. If they are put into classes in which they are obliged to spend a month or more on preliminary work, the connection of which to what they are after they do not see, they will not attend. The Young Men's Christian Association evening classes meet this special demand better than the evening schools at present do. I feel quite sure that even if the public schools were made ideal, there would be a very considerable demand for instruction under the conditions under which it is given in the Young Men's Christian Association classes."

### *Social Education Meetings.*

The Social Education Club of Boston has arranged for two meetings in that city, in coöperation with section L (Education) of the American Association for the Advancement of Science. A public meeting of a popular character will be held on the evening of Wednesday, December 29. On the following (Thursday) morning, a scientific and technical session will be held with section L.

The general topic for both meetings will be "The Equalization of Educational Opportunity," or "How may the School or College best develop in all Pupils their Possibilities of Usefulness as Members of the Community?" The particular subjects to be discussed include the following:

(1) Retardation in the grades, its causes and its remedies.

(2) The recoil from work, due first to asking too great an effort on the part of pupils, and secondly to asking too little. Does equal work demanded of every pupil lead to this result? Do equal tasks equalize educational opportunities?

(3) The motive for study. Can the motive for service to their comrades be made a motive for study and expression on the part of pupils? How can this kind of team play be fitted into the ordinary requirements of the course of study?

(4) The differentiation of individuals, and the consequent differences of their work as coöperative members of society.

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# THE DENTAL DISABILITIES OF SCHOOL CHILDREN.[1]

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I esteem it a special privilege to be given the opportunity to address an audience of teachers upon a phase of hygiene which is growing daily in importance and which has a direct bearing upon the character and progress of educational work.

Perhaps no aspect of modern educational activity is more characteristic than that which is concerned with the interrelationship of bodily and mental health. A generation ago, serious consideration of the health factor was regarded as outside the sphere of educational discussion, even a decade ago the hygiene of school children was only of incidental interest, whereas to-day it is commanding the attention of educators the world over as a problem of paramount importance fundamental to the work of education. So actively has the conception of interdependence of bodily health and mental efficiency been developed, that the old dictum of Juvenal, *mens sana in corpore sano,* in the light of modern investigation has attained to the dignity of a scientific axiom. To-day no one of intelligence questions the essential importance of the health of school children as a prerequisite to efficient school work, and the health problem is becoming a more and more important consideration in its educational relations.

While the hygienic aspect of the educational problem is distinctly modern in its development, the underlying principle of the interdependence of mental and bodily activity awakened interest much earlier as an educational question.

In a remarkable paper by Dr. Edward Seguin, of New York, entitled, "New Facts and Remarks Concerning Idiocy,"[2] the author points out the mutual dependence of the great nervous centers and the peripheral nerve endings, and the greater possibility of acting upon the centers through the periphery than on the periphery through the centers, at least during the period of growth. He was led to this important deduction as the result of his experience in the successful education of imbeciles by a system of training based upon the stimulation of the sensorium through the tactile and visual perceptive faculties, as a result of which he was enabled to enunciate the physiological principle afterwards successfully utilized in the manual training idea, *i. e.* the education of the brain through the perceptive faculties as a whole rather than through those of the ear and eye exclusively. Reference is made to this pioneer work because it so clearly involves a recognition of the important part played by the nervous mechanism of the body in the educational process, and thus affords an easy step to the logical deduction that whatever interferes with the integrity of the nervous mechanism as such or with its normal functioning, constitutes in greater or less degree an obstacle to the education of the mind.

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[1] An address delivered before the Teachers' Institute of the Reading District at Reading, Pa., October 30, 1909.

[2] A lecture delivered before the New York Medical Journal Association, October, 1869.

In the consideration of physical defects as related to individual educational progress, those deficiencies which obviously interfere with the child's ability to study were naturally the first to attract attention. Hence defects of vision and of hearing, being direct obstacles to study, have commanded greater and more sympathetic consideration upon the part of school authorities than a much larger and equally potent, though less obvious, group of disabilities which are only now beginning to excite the interest which their importance warrants. In this latter class may be included the whole range of disorders, local and constitutional, which have their origin in abnormal conditions of the mouth and its contained dental organs. Time will permit of only a general and hasty reference to the main features of this phase of the subject.

Apart from its relation to articulate speech and respiration, the mouth is the portal of the digestive tract: it is the laboratory in which the food is prepared for digestion, and in which the initial stage of digestion takes place. In order that the preparation and predigestion of foods shall proceed normally, it is essential that the dental apparatus shall be normally developed, the teeth correctly arranged with reference to their relative positions and that they be sound and clean, and that the saliva which is the digestive juice of the oral cavity shall be normal in composition and sufficient in quantity. Imperfections in these requisites entail disturbance not only of the process of food preparation and its normal predigestion in the mouth, but where these processes are continuously interfered with, derangement of the entire digestive and assimilative mechanism ensues, giving rise to a long category of disease conditions. Such being the case, the care of the mouth and teeth becomes an important and necessary department of hygiene, requiring the same careful study and intelligent application of health rules and their enforcement which we recognize as essential to the protection of bodily health against other sources of disease causation.

The most potent and general cause of dental disability and consequent disease is uncleanliness of the mouth and teeth. In the past twenty-five years the scientific investigations which have been made of the causes of dental disease have demonstrated beyond question that the human mouth presents conditions favorable to the growth and development of a large variety of bacterial organisms, very many of them being the known causes of a large number of local or bodily diseases. In the human mouth the conditions of temperature, moisture, oxygen and food supply required for the development of bacteria are found in an ideal relation so that the mouth becomes as it were an incubator in which these disease-producing organisms multiply with astonishing rapidity. In an habitually unclean mouth certain of these germs bring about fermentation of starchy foods and sugars, generating an acid which dissolves the mineral salts from the hard structures of the teeth, exposing the cartilaginous matrix or basis of the dentine; this in its turn becomes infected by germs of putrefaction which liquefy and destroy it, producing the disease known as dental caries or tooth decay. Beside the germs of dental caries, pus germs or those which are the exciting cause of suppurative inflammation are found abundantly in all unclean mouths as well as the germs which are the exciters of pneumonia, tuberculosis and a host of other well-known diseases. Where ordinary care is given to brushing and cleansing the teeth, the total number of these disease-producing germs does not reach a point beyond the power of the defensive forces of the healthy body to take care of, but in neglected mouths not only are disease processes set up in and about the teeth themselves, but the constant swallowing of disease-producing germs and their excretions along with the food infected by contact with the germ-laden teeth and soft tissues of the mouth, sets up infections of the whole digestive tract. This in time becomes a manufactory of poisonous substances which are absorbed into the general circulation, causing a chronic blood poisoning and general interference with the whole bodily nutrition.

It will thus be seen that an unclean mouth is the originator not only of local dental disturbances, but it is a source of infection to the whole body. The chronic poisoning of the blood stream in this manner may and often does, in the course of time, so interfere with the processes of nutrition as to depress the vital resistance of the body to a plane where it is unable to prevent infection from specific disease germs and the unfortunate sufferer may thus be carried off by an attack of acute disease, having its unsuspected predisposing cause in a chronically filthy mouth. Another result of tooth decay is important to note. When caries has destroyed the hard tissues which protect the central organ of the tooth, the dental pulp, its infection and death quickly follow, the process usually being signalized by an attack of acute toothache. Death and loss of the pulp leaves an open passageway through the tooth root for the entrance of disease-producing germs, affording them direct access to the bony structures in which the tooth roots are embedded. The production of a dental abscess resulting in a so-called "gum boil" is a common expression of this type of infection. But pus-producing germs are not the only disease producers that find entrance to the circulation through this channel. It has been found as the result of careful, clinical and scientific study, that the germ of tuberculosis is among the invaders that gain frequent access to the body through the avenue of the empty tooth pulp chamber giving rise to tuberculous abscesses so commonly observed in or about the lymphatic glands of the neck or giving rise to tubercular inflammation of the bones of the jaws and those of their related regions.

The local and general diseases whose origin has been unquestionably traced to infections arising from filthy mouths are numerous and convincing, but time will not permit even a short enumeration of them here. I have merely endeavored to point out and briefly illustrate the general fact.

Apart from the damage to health and the consequent physical disability arising from oral uncleanliness, neglect of mouth hygiene leads to loss of the teeth, a loss which has never been taken as seriously by the uninformed as its importance warrants. The loss of even a single tooth should be looked upon as a calamity, for the reason that it means always the loss of function of two teeth, the one actually lost and its opposing tooth, for a tooth without its normal antagonist is functionally useless. But even if this should constitute the total loss there soon follows a disarrangement of the whole denture, the teeth assuming abnormal and irregular positions because of the loss of mutual support which the individual teeth exert upon each other in a normally arranged denture. This entails a disturbance of the proper relations of the food-grinding mechanism and interferes with the function of mastication. The evils of imperfect mastication need scarcely be dilated upon. To put upon the stomach the burden of digesting food imperfectly masticated, is to invite disease of the entire nutritional apparatus. The study of this phase of the nutritional question and the results obtained from the experiments made by Prof. Chittenden, of Yale, in collaboration with Mr. Horace Fletcher are sufficiently convincing and are doubtless familiar to all of you.

The relation of this broad subject to the health of school children and to their mental efficiency is just now attracting world-wide attention. America, the land of dentistry and dentists, has, strange to say, been rather tardy in giving it serious and practical consideration. Germany and Austria, Russia, France, Switzerland, Sweden, England, and Australia have been making careful studies of dental and oral hygiene in relation to school children for a number of years. The institution of systematic dental inspection of school children and the creation of free dental clinics may, generally speaking, be said to be accomplished facts in the countries I have named. Statistics show that from 90 to 98 per cent of the school children in all countries suffer from some form of preventable dental disease, and what concerns us more directly is that the greater proportion of backward children, those unable to keep up with the average work of the class, are found to be sufferers from some form of dental disorder, arising mainly from neglect of the simplest and most obvious rules of mouth hygiene. Among upwards of fifteen thousand patients annually treated at the dental clinic of the University of Pennsylvania, a large proportion are school children between the ages of six and fifteen years. Examination of their mouths rarely discovers one that is maintained in a fair state of cleanliness, few own or use a tooth brush, and all require more or less professional attention.

In studying the causes of mental inefficiency in backward school children, Prof. Lightner Witmer of the department of psychology at the University of Pennsylvania has been focussing attention upon the mouth conditions of these children. Many of them are referred by Dr. Witmer's department to our dental clinic, they are invariably "dental cripples" as some one has aptly termed them, they present infected mouths, decaying teeth, damaged grinding mechanism from loss of teeth or from irregularities, all of which are manifestly interferences with bodily health and therefore of mental efficiency. It has been discovered that one-third of the 148,000 pupils in the public schools of Philadelphia are over age for their grade. Records show that 483 children have been thirty months or more in the same grade, while 9486 pupils have been recorded as beginning for the third time in the same lessons, and from these facts it is contended that many children are mentally incapable of pursuing their studies.

It is not my purpose to discuss in detail the relations which each of these dental disorders bears to the efficiency of the child as a student at school; from whatever angle the subject is investigated the logical conclusion arrived at is the same, viz., that all these disorders are sources of ill health and that ill health is a direct handicap to the effective working of the nervous mechanism, upon the normal functioning of which intellectual progress depends.

The practical question which is the necessary outcome of our acceptance of this general major premise is, what can be done about it? My own observation leads me to conclude that three things are necessary:

First, education of children and parents as to the essential facts concerning mouth hygiene to an extent that will force the conviction that cleanliness of the mouth and teeth is essential to health and is the best safeguard against disease.

Secondly, systematic and regular inspection of the mouth of school children by expert dentists.

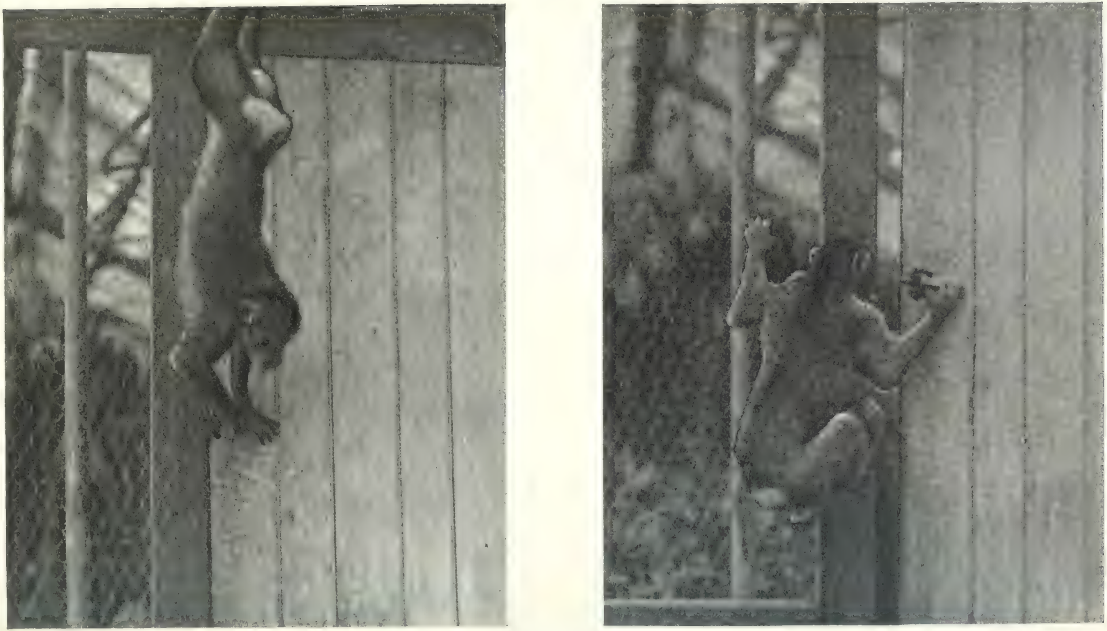
Thirdly, the organization of dental dispensaries where the needy may obtain proper dental treatment free of charge.

It is with considerable hesitation that I suggest an addition to the work of teachers already overburdened with the duties imposed by a curriculum which is said even now to be overcrowded; nevertheless the importance of a knowledge of the principles of hygiene in general, and of dental hygiene in particular, is so evident and so fundamental in its educational relations that it would seem to be the part of wisdom and common sense to embody a reasonable amount of instruction in dental hygiene in the curriculum of study even to the neglect of some relatively less important topic now required as a part of the educational scheme. I think we would be justified in taking such ground quite apart from the humanitarian features of the case, when we consider that all of the evidence goes to establish the fact that lack of knowledge of dental and oral hygiene is the fruitful cause of health disorders which directly inhibit the capacity of the child for study, and, therefore, from the educational standpoint alone as a means of improving the mental efficiency of school children, the introduction of a fair amount of instruction in the elementary phases of dental and oral hygiene would be more than justified. No amount of instruction in this subject can be productive of practical results without efficient means for putting into effect the principles taught. This will require among other things inspection of the mouths of public school children by experts qualified for that work.

It is a work which should not be entrusted to medical inspectors; the curriculum of medical study does not furnish the training requisite for the intelligent and skillful performance of that class of work. Under present conditions, those best qualified for the study of mouth inspection are dental specialists who by training and experience have been properly educated for that work; and, finally, in connection with school education in dental hygiene and efficient dental inspection of school children, there must be provided the means for the treatment of dental disorders where the needy can receive the required attention free of expense. This will necessitate the creation of a large number of free dental dispensaries organized in principle upon the same efficient lines that characterize the free dispensary which has been established in your own city of Reading.

In order to secure an efficient organization of these three fundamental factors, education, inspection and treatment, a collaboration of school boards, of municipal authorities and of the organized dental profession must be brought into harmonious relationship.

In closing, I cannot suggest to you a better expression of the great truth which is at the basis of this now general movement than to quote to you a statement made by Dr. Elliott, of London, in a report upon the subject made to the School Dentists' Society of England in 1904. Dr. Elliott said, "The child's health, mental and physical, is a national asset which it is the duty of the state to preserve and foster by every possible means."



TWO METHODS OF OPENING A DOOR.

CURIOSITY AND IMITATION IMPEL A MACACUS MONKEY, WITHOUT TRAINING, TO LIFT THE LATCH AND OPEN A DOOR

# INTELLIGENT IMITATION AND CURIOSITY IN A MONKEY.

By Lightner Witmer.

This monkey is a Macacus (M. cynomolgus) brought by Dr. William H. Furness 3rd from the Island of Java. The animal is a female and has just reached puberty. Her dominant traits are constant activity and curiosity. This makes her exceedingly troublesome when given the freedom of a room. A dark corner, cupboard, or pocket tempts her to investigate, regardless of the consequences.

Until recently she was kept in a cage in a room of Dr. Furness' greenhouse. A door of this room is shown in the illustrations accompanying this article. The door was fastened by an ordinary latch. The monkey was often released from her cage and given the freedom of the room. She spent this time in constant motion, jumping and climbing about, examining every object with fleeting but minute attention. Perhaps it was the mere impulse to explore which led her in the first instance to open the door of the greenhouse. She did this first by hanging by her hind legs from a pipe just below the roof, reaching the latch with her hands, as shown in one of the two illustrations. There was no trial and error, for Dr. Furness tells me she succeeded in lifting the latch and pulling the door open at the first attempt. She had never been subjected to any of the lock and maze experiments of the animal psychologists, nor had any effort been made to train her. She was never known to hang by her hind legs in examining or playing with any other object in the room. She may have conceived the purpose of opening the greenhouse door, thus making an intelligent attempt to imitate the persons whom she had seen going in and out of this door. She has never imitated any action which was not of direct interest to herself. Properly speaking, she does not blindly imitate at all. She does only what instinct and interest lead her to undertake.

She learned to open the door of her cage and also the door leading into another room, the knob of which she could reach through the bars of her cage. This door was partly of glass and through it she could look into the adjoining room. On one occasion I saw her observe intently some people in this room who were about to come into the room containing her cage. She then reached through the bars of the cage, turned the knob of the door, pushed the door wide open and sat waiting on her haunches with expectant gaze. There could be no doubt that she had conceived in her mind the entrance into the room of the persons whom she saw in the adjoining room, and it looked as though she had opened the door for the purpose of allowing them to enter.

She learned to lift the latch of the door of her room by another method shown in the second of the two illustrations. To do this she climbed up the screen partition wall until she reached the height of the latch. She learned this method some time after she had been opening the door by the method of hanging from above. She was never taught either method; in fact she was punished for opening the door. Punishment had no effect upon her and it became necessary to stop her from escaping into the next room by attaching to the door a small bar which could be turned to hold the latch in place. She never learned to move this bar to one side and very soon her attempts to open the door became less frequent.

The method by which she was induced to open the door when we undertook to photograph her in the act calls attention to the importance of finding motives which really appeal to the animal intelligence we may have under investigation. Thus, we tried to persuade her to manipulate the latch by calling her attention to it, opening and shutting the door, carrying her to the door and placing her hand on the latch. She would make no effort to do what we desired. Her hand when placed on the latch fell feebly from it. I tried to induce her to hang from the pipe with her hind legs, lifting her into the proper position, but she would not try to hang from the bar. We were compelled to give up our attempt to photograph her and did not succeed until we tried a different method some days following. Dr. Twitmyer, who took the photograph, remained in the room with her, ready to snap the picture as soon as she should be in position. Dr. Furness and I went through the door into the greenhouse, called to her, stamped our feet, came back and looked into the room, jiggled the latch and finally succeeded in getting her mind fixed upon the idea of following us into the next room. Perhaps we were breaking down in the animal's mind the opposing influence of the previous punishment which she had received for opening the door. At all events, she finally opened the door several times and by both methods. The illustrations are photographs of the animal at the moment of lifting the latch.

I fear to make hasty interpretations of animal behavior, but I must admit I have been struck by what appear to be flashes of intelligence which are the result of a momentary concentration of attention. Since Herbart's time we have been willing enough to recognize the educational value of an appeal to the child's natural interest. The animal has interests also, but these are not necessarily the same as human interests. A just measure of an animal's intelligence can be made only by studying him at moments when his whole interest is aroused. A blind instinct to do something, no matter what, or a blind curiosity, may indeed have inspired the first opening of the door. Of a blind impulse to imitate, such as appears in the anthropoids and in children and even in men and women, I have seen no trace in this monkey. She pays no heed to what does not concern her. But let her interest be aroused and she manifests through her behavior an awakened consciousness which approaches the human under like circumstances. Whatever motive may have inspired the first opening of the door, I believe the act came to be a conscious and intelligent imitation of a human action, and, at the time she was photographed, was performed with a consciously conceived purpose of gaining an entrance into the adjoining room.

# PENNY LUNCHEONS.

By Alice C. Boughton,

*Philadelphia.*

The children who attend the schools in the congested parts of the city come from homes where small attention is paid to their food. Many of them start to school after a breakfast of stale bread and tea, or no breakfast at all. A cent or two may or may not be provided by their parents, but guidance in its spending is seldom given; consequently the children buy from the unsanitary stores or from pushcarts near the school what most appeals to them—taffy-on-a-stick, a large, unwholesome pretzel, cinnamon bun, or an ice-cream sandwich.

To meet what was known to be the need of these children for wholesome food, prepared and served within the means of the poorest, the Starr Centre Association fifteen years ago started the penny luncheon, which was reorganized on its present basis two years ago. The unit is one cent, and the food which is served to the children at their regular recess period costs just what they give for it, one cent, the cost of equipment and running expenses being met by the Starr Centre.

To keep up the children's interest the menu is varied slightly from day to day. The articles served are:

One cup of cocoa (one cup equals one-sixth of a quart) one cent;
One cup of strawberry tapioca, one cent;
One cup of rice pudding, one cent;
One cup of bean soup, one cent;
One cup of creamed hominy, one cent;
One-half shredded wheat biscuit with stewed fruit, one cent;
Three pretzels, one cent;
Four graham wafers, one cent;
One tea bun, one cent;
One coffee cake, one cent;
One banana, apple, orange, peach, grapes, pear, etc., one cent;
Five large boiled Spanish chestnuts, one cent;
Stewed dried and fresh fruits in season.

The food value of all the recipes has been calculated for caloric value by the students of the Normal Domestic Science course at the Drexel Institute.[1] In every case, with the possible exception of the fruit, the heat value is as great or greater than that of an egg. To obtain these results the recipes are not only carefully worked out, but also from week to week their preparation is supervised in order that the standard may be maintained.

| | INGREDIENTS | PROTEIN, GRMS. | FAT, GRMS. | CARBOHYDRATE, GRMS. | CALORIES | CALORIES PER PORTION, | COST | NO. SERVED |
|---|---|---|---|---|---|---|---|---|
| Cocoa No. 1 | ¾ c. Cocoa, 3 qts. Milk<br>¾ c. Sugar, 1 qt. Water | 108.12 | 133.41 | 338.24 | 2973 | 124 | .2478 | 24 |
| Cocoa No. 2 | 1 c. Cocoa, 2½ qts. Milk<br>1 c. Sugar, 1½ qts. Water | 99.29 | 123.47 | 326.25 | 2892 | 116 | | 24 |
| Rice Pudding | ½ c. Rice, 1 qt. Milk<br>½ c. Sugar, Water, Salt | 37.95 | 36.57 | 237.15 | 1478 | 164 | | 12 |
| Bean Soup | 1 qt. Beans, 5¼ oz. Salt<br>Pork, Water, Seasonings | 178.54 | 114.71 | 439.32 | 3492 | 194 | .13 | 18 |
| Bean Soup without Meat | 1qt. Beans, Salt, Pepper,<br>Water, Pot-herb, Celery | 165.84 | 13.26 | 439 32 | 2538 | 141 | .09 | 18 |
| Meat Sandwiches | | 172.35 | 94.14 | 497.68 | 3304 | 143 | .2318 | 23 |
| Milk | ⅛ qt., = ⅔ of ½ pt. cup | | | | | | .01 | |
| Pretzels, 3 | | 3.35 | 1.42 | 26.64 | | 133 | .01 | |
| Cream Lunch Biscuits, 3 | | 4.15 | 5.18 | 29.85 | | 182 | .01 | |
| Graham Wafers, 4 | | 3.54 | 3.35 | 26.14 | | 148 | .01 | |
| Apricots by weight | 25.05 grms. | 1.15 | .245 | 15.31 | | 68 | | |
| Peaches " " | 52.25 grms. | 2.45 | .52 | 32.65 | | 145 | | |
| Prunes " " | 45.25 grms. | .81 | | 28.14 | | 116 | | |
| Shredded Wheat Biscuit, 1 | | 3.69 | .49 | 27.42 | | 128 | | |

Many of the children buy more than a cent's worth, and some few are able to spend five cents, but there is a large number in each school who do not buy any luncheon at all, and to get at the reason for this the Starr Centre has put a penny luncheon visitor at work. She visits the school at the recess period and makes friends with the children who have no penny to spend. She then goes to the home and tries to find out the conditions, and where possible remedy them. Sometimes it is simply ignorance or neglect on the part of the parents, and when their attention is called to the luncheons they are very willing to give their children the necessary pennies. Or it may be that the wage earners of the family are out of work, and there are no pennies. In such cases the visitor reports the matter to the Society for Organizing Charity. But in every case her object is to make the question of the luncheon an introduction into the home, and to use what influence she may gain there to raise the standard of living.

The visitor has been at work only a short time, and no definite conclusions can as yet be drawn, but it is hoped that she will not only cause an increase in the sale of luncheons by arousing the parents' interest in them, but that she will strengthen the bond between the home and the school.

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[1] The values were calculated from the analyses given in U. S. Agricultural Bulletin, No. 1287, American Foods—and are as accurate as I know how to get them without actually analyzing quantities of our food. They serve the purpose of getting at the comparative value of the different articles.

The luncheons are being served in the Starr Centre Kindergarten, and in five public schools—two special schools, one colored, one Russian Jewish, and one Italian school. At the special schools

A SCHOOL LUNCHEON.
NORMAL PROGRESS IN SCHOOL REQUIRES A SUFFICIENT AMOUNT OF NUTRITIOUS FOOD.

the session is from nine until two, and the luncheons are served twice daily, one at the morning recess period and the other at noon. In the other schools the luncheon is served at the early recess only.

It is interesting to note the various tastes of children of the same age and condition in life, but of different races. The colored children love creamed hominy, and have to be persuaded to buy stewed fruit; shredded wheat they will not touch. The Jewish children will buy quantities of stewed fruit and like the shredded wheat; but they were at first very suspicious of the hominy, and it was not until the teachers sought to influence them, and talked to them about corn, how it grew, and how the hominy was prepared from it, that they consented to try it. Now they have been educated to like it very well.

The principals and teachers have been of great assistance in making the luncheons popular by talking about the advisability of spending one's money for cocoa or soup in preference to a large and sticky bun, and by buying the luncheons for themselves, which makes the children feel that the luncheons must be very good indeed. They are all in favor of penny luncheons, and the association owes them a debt of gratitude for their active co-operation. Of course, the chief factor in the problem was and is the children themselves, but to a certain extent they have ceased to give any trouble, for they soon learn to like the food and regularly buy it in preference to the apple-woman's.

The first year after the reorganization nearly sixty thousand luncheons were sold, with a profit of three dollars and a half. Last year nearly eighty-nine thousand were sold, with a profit of two dollars and a half, the increase in number being partly due to the opening of a new school. This year it is hoped that over a hundred thousand luncheons will be sold with no profit. Thus the association will accomplish its aim—to give the children just as much clean, wholesome, and nutritious food as it is possible to give for a penny.

# PROMOTION, RETARDATION, AND ELIMINATION.

By Edward L. Thorndike, Ph.D.,
*Teachers College, Columbia University.*

It is or should be well known that in every administrative educational unit such as a city school system or a private secondary school, the fractions of the total course nominally to be completed in equal times,—for example, the grades of the elementary school, or the years of the secondary school,—may actually require unequal periods. This requirement of unequal periods is disclosed by the fact that a large percentage of the pupils spend more time in one grade than in another. Nevertheless a year or half year, as the case may be, is assumed to be the normal time for all pupils and all grades alike.

The general tendency of the elementary or secondary schools in this country is not known. If there is a general tendency affecting some particular grade or grades, the fact is of importance for three reasons. If there is a general tendency such as to make the completion of the second grade in the "normal" unit of time a specially difficult task for the pupil who reaches it, it would probably be advisable to eleminate this tendency. Teachers, pupils, and parents would thereby comprehend more easily the work of the school and what is necessary to its satisfactory completion. If the inequality is not removed, its existence should at least be made known to teachers, pupils, and parents. A more precise knowledge of these inequalities will also help us to estimate the nature and amount of the retardation of pupils in school, and the elimination of pupils from school.

I propose, therefore, to measure the extent to which the different grades of the elementary and high schools are, in American cities in general, of unequal length.

The most desirable material from which to calculate this measurement would be a sufficient number of individual educational histories, giving accurately how long each pupil took to complete grade 1, how long to complete grade 2, etc. Such life histories do not exist at all in published form, only rarely in the written records of school officers, and could be secured in adequate number only at a cost for travel, time, and clerical assistance which is for the author prohibitive. The facts can be fairly well determined, however, from the city school reports, from an examination of the not infrequent statements of the number of promotions by grades. This method is the one which I shall employ.

By examining the reports of over one hundred cities and towns, covering a period of from one to five years, I have obtained fifteen statements from which one can infer with fair accuracy, the comparative lengths of the elementary school grades for each city in question, and four in which the same is true for the high school grades also.

Although it is the *relative* length of the different grades which is to be measured, I shall give first the actual percentages of pupils who at the end of the year fail to be promoted, and would therefore be compelled to repeat the work of the grade if they remained in school. I give them because they are the original data bearing on the general problem of retardation, and are in some respects superior to the statistics of over-age pupils that have hitherto been collected. These percentages of pupils failing of promotion are calculated, when it is possible, directly as percentages of those enrolled in the grade at the end of the year, but in the case of three cities, Chicago, Kansas City, Mo., and Rochester, the best that could be done was to infer the enrolment at the end of the year according to the method shown in the appendix at the end of this part of the article. The sources of the data, with methods of inferring the June enrolment in the cases where it is not directly given, are presented in the appendix. The calculated proportion of pupils enrolled at the end of the year who failed of promotion, is given in table I, on the following page.

To get from these figures the relative length of the grades in such form that the facts may be most conveniently examined, I have computed the proportion which each is of the average for grades 2 to 8 of the city in question. This gives the figures of table II. If the figure is over 1.00, it means that the percentage of pupils enrolled at the end of the year who failed of promotion in that grade, is greater than the percentage for grades 2 to 8 of that city taken together (regardless of the *number* of pupils in each grade), *i. e.* the grade is "longer" than the average of grades 2 to 8 in that city. If the figure is under 1.00, it means that the grade is "shorter" than the average of grades 2 to 8 in that city. Of course, any other division could be used. The process alters no relation, but only makes the facts for each city clearer, and the measurement of the general tendency of the cities as a group more convenient. I have used grades 2 to 8 rather than 1 to 8, because

## TABLE I.

PROPORTION OF PUPILS ENROLLED AT THE END OF THE YEAR WHO FAIL OF PROMOTION.

| GRADES | Kindergarten | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 H | 2 H | 3 H | 4 H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brooklyn, N. Y., 1908 | 505 | .28 .145 | .125 .130 | .135 .135 | .135 .130 | .160 .150 | .160 .160 | .180 .160 | .145 .090 | ... | ... | | | | |
| Chester, Pa., 1903 | ... | .23 | .12 | .16 | .21 | .23 | .34 | .27 | .40 | ... | ... | .24 | .15 | .22 | 0 |
| Chicago, Ill., 1899 | ... | .36 | .18 | .15 | .14 | .18 | .17 | .16 | .30 | ... | ... | .20 | .20 | .16 | .02 |
| Columbus, Ohio, 1902 | ... | .38 | .10 | .16 | .21 | .19 | .18 | .09 | .18 | ... | ... | .22 | .20 | .33 | .08 |
| Elgin, Ill., 1901 | ... | .035 | .05 | .06 | .08 | .09 | .09 | .10 | .12 | ... | ... | ... | ... | ... | ... |
| Jamestown, N. Y., 1898 and 1899 | ... | .24 | .15 | .14 | .10 | .12 | .09 | .14 | .30 | ... | ... | ... | ... | ... | ... |
| Kansas City, Mo., 1907 | ... | .26 | .11 | .13 | .24 | .24 | .28 | .25 | .17 | ... | ... | ... | ... | ... | ... |
| Manhattan, N. Y., 1908 | .510 | .290 .150 | .135 .130 | .130 .130 | .140 .150 | .165 .160 | .150 .145 | .185 .140 | .155 .170 | ... | ... | ... | ... | ... | ... |
| Pasadena, Cal., 1900 and 1902 | ... | .30 | .17 | .27 | .24 | .21 | .22 | .25 | .32 | ... | ... | ... | ... | ... | ... |
| Rochester, N. Y., 1897 | ... | .36 | .14 | .16 | .16 | .18 | .15 | .22 | .20 | .24 | ... | ... | ... | ... | ... |
| San Francisco, Cal., 1892 | .34a | .19 | .23 | .27 | .25 | .25 | .23 | .17 | .10 | 0 | ... | ... | ... | ... | ... |
| Stockton, Cal., 1893 | ... | .32 | .08 | .17 | .19 | .15 | .06 | .16 | .06 | ... | .03 | .09 | 0 | 0 | ... |
| Trenton, N. J., 1896 and 1897 | ... | b | ....... | .12 | .13 | .08 | .09 | .09 | .18 | ... | ... | ... | ... | ... | ... |
| Utica, N. Y., 1900, 1901, and 1902 | ... | ....... | .10c | ....... | ....... | .10d | ....... | .13 | .23 | .26 | ... | ... | ... | ... | ... |
| Wheeling, W. Va., 1908 | ... | .50 | .30 | .27 | .35 | .34 | .13 | .21 | .08 | ... | ... | ... | ... | ... | ... |

[a] "Receiving class." [b] The figure for grade 1 will be very high, as the enrolment of grade 1 is very much larger than that of 2 or 3. [c] For grades 1, 2, and 3 together. [d] For grades 4, 5, and 6 together.

## TABLE II.

PROPORTION (IN HUNDREDTHS) WHICH THE PERCENTAGE OF PUPILS ENROLLED AT THE END OF THE YEAR WHO FAIL OF PROMOTION IN EACH GRADE, IS OF THE AVERAGES OF SUCH PERCENTAGES FOR GRADE 2 TO LAST GRAMMAR GRADE (INCLUSIVE) IN THE CITY IN QUESTION.

| GRADES | Kinder-garten | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 H | 2 H | 3 H | 4 H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brooklyn | 3.61 | 2.00 1.04 | .91 | .96 | .99½ | 1.10½ | 1.14 | 1.21½ | 1.04 .64 | ... | ... | ... | ... | ... | ... |
| Chester | ... | .93 | .49 | .65 | .85 | .93 | 1.38 | 1.09 | 1.62 |  | ... | .97 | .61 | .89 | 0 |
| Chicago | ... | 2.25 | 1.13 | .94 | .88 | 1.13 | 1.06 | 1.00 | .81 | ... | ... | 1.25 | 1.25 | 1.00 | .13 |
| Columbus | ... | 2.17 | .59 | .93 | 1.20 | 1.09 | 1.05 | 1.12 | 1.03 | ... | ... | 1.26 | 1.14 | 1.93 | .48 |
| Elgin | ... | .41 | .59 | .75 | .99 | 1.00 | 1.05 | 1.15 | 1.36 | ... | ... | ... | ... | ... | ... |
| Jamestown | ... | 1.64 | 1.01 | .93 | .68 | .82 | .61 | .97 | 2.00 | ... | ... | ... | ... | ... | ... |
| Kansas City | ... | 1.32 | .56 | .65 | 1.21 | 1.42 | 1.29 | .88 | ... | ... | ... | ... | ... | ... | ... |
| Manhattan | 3.42 | 1.95 1.01 | .89 | .87 | .98 | 1.09 | .99 | 1.09 | 1.04 1.14 | ... | ... | ... | ... | ... | ... |
| Pasadena | ... | 1.25 | .70 | 1.12 | 1.00 | .88 | .93 | 1.03 | 1.35 | ... |  | ... | ... | ... | ... |
| Rochester | ... | 1.97 | .79 | .90 | .89 | .99 | .84 | 1.19 | 1.10 | 1.30 | ... | ... | ... | ... | ... |
| San Francisco | 1.58[a] | .89 | 1.09 | 1.24 | 1.16 | 1.16 | 1.09 | .81 | .45 | ... | ... | ... | ... | ... | ... |
| Stockton | ... | 3.21 | .83 | 1.66 | 1.87 | 1.49 | .60 | 1.60 | .64 | 0 | .30 | .85 | 0 | 0 | ... |
| Trenton | ... | [b] | ... | 1.04 | 1.13 | .70 | .78 | .78 | 1.57 | ... | ... | ... | ... | ... | ... |
| Utica | ... | ... | .72[c] | ... | ... | .69[d] | ... | .93 | 1.64 | 1.89 | ... | ... | ... | ... | ... |
| Wheeling | ... | 2.08 | 1.25 | 1.13 | 1.16 | 1.42 | .51 | .88 | .33 | ... | ... | ... | ... | ... | ... |

[a] "Receiving class." [b] The total enrolment in Trenton in grade 1 shows that this relation would be much over 1. [c] For grades 1, 2, and 3 together. [d] For grades 4, 5, and 6 together.

of the very great variability among cities in the proportion of failures in the first grade, and because of certain eccentricities in the reports of first grade enrolments, which will be discussed later.

Before applying these facts to the discussion of the course of study, retardation, and elimination, we must consider how far these percentages of failures on enrolments at the end of the year, are valid measures of the inequality of the grades in length.

The first inadequacy of these data as measures of the relative length of the different grades, is that no account is taken by them of children who did the work of a grade in less than the normal time. Indeed, a child who is promoted during the year from grade 3 to grade 4, and then fails to be promoted at the end of the year to grade 5, may be recorded not at all for grade 3, and as a failure for grade 4, though he really completes grades 3 and 4 in two years, and though his "failure" with grade 4 is not a proper measure of its relative difficulty compared with grade 5, which he later completes in one year. But, as a matter of fact, for the *relative* lengths of the different grades, our reports of conditions at the end of the year are not seriously affected by this inadequacy: first, because the pupil who is promoted during the *year and is permitted to stay in the advanced grade until the end of the year*, rarely if ever fails to be promoted from it at the close; and secondly, because there is a strong inverse correlation between the percentages of failures in a given city and the percentages of achievements in less than the "normal" time. For the first of these statements I have no evidence other than general observation, but I believe that no competent student of school administration will dispute it. The second I am able to demonstrate from the cases of Galesburg, Ill., and Utica, N. Y., in whose reports the percentages of more rapid advance than usual are given. The relevant facts are given in table III.

The second inadequacy is due to the fact that the second or third annual failure of a pupil after two or more years in a grade is not given any more weight than a first failure. Here, again, the probability is that for our purpose the injury done is slight or none at all. There is probably a very close direct correlation between the percentages of failures as here measured, and the percentages with due weight attached to second and third failures.

Of course, as I have already stated, the school histories of individual pupils are the proper data for our measurement. But the general relations in the whole group of cities, between the relative lengths of the grades as calculated from the percentages of failures alone, are probably much the same as they would be if calculated from the time spent in each grade by the individuals completing it.

The third inadequacy is due to the fact that each percentage of failures is based on the number of pupils in that grade *at the end of the year,* not of those who reached the grade and attempted its work, much less of children of equal original capacity. This inadequacy does no harm if only it is kept in mind. We must remember, for instance, that if all the pupils who began the work of the sixth grade had stayed in school until the end of the year, the percentage of failures would probably have risen, because the older, less scholarly, and duller pupils in the sixth grade probably tend more often to be eliminated. If all the pupils who completed the second grade stayed in school long enough to spend one year in the fourth high school, the percentage of failures there would almost certainly be very much higher, supposing present standards for promotion to be maintained.

TABLE III.

DATA SHOWING INVERSE CORRELATION BETWEEN FAILURES AND RAPID PROMOTIONS.

| | Galesburg, Ill., 1898, p. 40. | | Utica, N. Y., 1900, 1901, and 1902. | |
|---|---|---|---|---|
| | Per cent of those promoted who complete the grade in | | Per cent of June enrolment completing grade ½ year or more ahead of class. | Per cent of June enrolment failing of promotion |
| Grades | Less than 1 yr. | More than 1 yr. | | |
| 1 | 35 | 34 | 12 | 10 |
| 2 | 26 | 13 | | |
| 3 | 14 | 24 | | |
| 4 | 11 | 18 | 12 | 10 |
| 5 | 17 | 17 | | |
| 6 | 21 | 32 | | |
| 7 | 17 | 26 | 8 | 13 |
| 8 | 7 | 45 | 6 | 23 |
| 9 | | | 1 | 26 |

"Equally long" for our purpose has to mean of any grade "equally long for such pupils as go to the end of it". The second and eighth grades are, for example, equally "long", if the time spent in the second grade by those who complete it equals the time spent in the eighth grade by those who complete it. There are a number of other important ways in which the second and eighth grades might be equally "long".

A fourth source of inadequacy is the complex nature of the figures for enrolment of grade 1, particularly the fact that the enrolment at the end of the year may include many children who have not spent the "normal" time in the grade, having entered school in the course of the year. For a full study of first grade retardation, this factor is of very great importance and should be measured. The figures for the first grade in tables I and II are undoubtedly higher than similar figures would be if calculated on the number of children enrolled at the end of the year who have been in the grades at least nine-tenths of the "normal" time. This is evidenced both by direct observation of school practice, and by the exceptionally low ratios of attendance to enrolment for the first grades.

It is also a fact that children may be freely admitted to the first grade, who are not yet ready to do its work even very slowly. This cannot occur in later grades except by unusual grading of the schools. It is sure to happen as a result of the normal variability of human intellect and character if the first grade work is such as the average child of normal age is ready for, so long as admission to the first grade is determined, without an examination, on age as the main requirement. It therefore happens that the first grade is in part a mere abiding place for children until they are able to do its work.

For later grades, then, our percentages are of those pupils who have been put there at the beginning of the year by school officers after the experience of the lower grades, while for grade 1 our percentages are of those who have got into the grade somehow, chiefly because they were of a certain age, and have stayed there from some date or other until the end of the year or half year.

It is very significant that in the cities where my records are for half grades, the second half of the first grade is hardly "longer" than the later half grades (see the data for Brooklyn and Manhattan), and that in San Francisco, when the first grade was preceded by a "receiving class", the first grade was a "short" grade. Consequently, I estimate that if a kindergarten or other preparatory course were required of all, and admission to the first grade made only at the beginning of the year or half year and only upon promotion from the preparatory course, the proportion for grade 1 in table II would drop to approximately 1.00.

There are other interesting considerations with respect to what these statistics of failure do *not* mean and do *not* imply. But

## TABLE IV.

PROPORTION (IN HUNDREDTHS) WHICH THE PERCENTAGE OF PUPILS ENROLLED AT THE END OF THE YEAR WHO FAIL OF PROMOTION, IS OF THE AVERAGE OF SUCH PERCENTAGES FOR GRADE 2 TO LAST GRAMMAR GRADE, INCLUSIVE, IN THE CITY IN QUESTION.

| GRADES | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 H | 2 H | 3 H | 4 H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cincinnati, Ohio, 1906 | 1.82 | 1.20 | 1.20 | 1.20 | .94 | .88 | .88 | .70 | .... | 1.32 | 1.32 | .75 | 0 |
| Fort Wayne, Ind., 1907 | 2.13 | .87 | .94 | 1.05 | 1.22 | .84 | 1.08 | .98 | .... | .... | .... | .... | .... |
| Haverhill, Mass., 1907 | 1.82 | 1.09 | 1.09 | .97 | 1.09 | 1.45 | .97 | .85 | .48 | .... | .... | .... | .... |
| Louisville, Ky., 1905 | 1.30 | .99 | 1.07 | .84 | 1.22 | 1.30 | .99 | .61 | .... | 2.21 | 2.30 | 1.37 | 1.53 |
| Malden, Mass., 1907 | 2.71 | 1.06 | .94 | 1.06 | .94 | .94 | 1.41 | 1.30 | .35 | .... | .... | .... | .... |
| Medford, Mass., 1907 | 2.47 | 1.65 | .59 | .94 | 1.30 | 1.06 | .94 | .59 | .94 | .... | .... | .... | .... |
| Philadelphia, Pa., 1908 | 1.24 | 1.07 | 1.02 | .96 | 1.19 | .96 | .90 | .90 | .... | .... | .... | .... | .... |
| Providence, R. I., 1908 | .99 | .50 | .85 | .78 | 1.21 | 1.35 | 1.49 | .85 | .... | .... | ... | ... | .... |
| Salt Lake City, Utah, 1907 | 1.51 | 1.23 | 1.03 | 1.23 | 1.10 | .89 | .96 | .48 | 1.10 | .... | .... | .... | .... |
| Somerville, Mass., 1907 | 1.74 | 1.23 | .92 | 1.03 | .82 | 1.33 | 1.33 | .72 | .62 | ... | .... | .... | .... |
| Springfield, Ohio, 1907 | 1.40 | 1.18 | 1.32 | 1.18 | 1.03 | 1.25 | .81 | .22 | .... | 1.10 | 1.54 | 1.18 | .66 |
| Wilkesbarre, Pa., 1905 | .45 | .61 | .50 | .40 | .71 | 1.11 | 1.41 | 2.22 | .... | .... | .... | .... | .... |
| Williamsport, Pa., 1908 | 1.63 | 1.21 | 1.45 | 1.33 | 1.21 | .96 | .84 | .60 | .42 | .... | .... | .... | .... |

it will be better to devote the remaining space to showing what they do mean, first, with respect to the course of study, secondly with respect to retardation, and thirdly with respect to elimination.

Fortunately, in considering these topics we can use measurements of the relative length of the grades from more cities than I have reported. Ayres,[1] working with recent reports, has found records in sixteen cities, thirteen of which are not included in my list. No substantial difference appears between the results from combining all the cities in both studies, and the results from either set separately, but the reliability is, of course, about one and four-tenths times as great. I have therefore recalculated all my results, after adding the thirteen cities. In combining Ayres' records I shall count one city only once when there are two records, and use the records in the form of *per cent failing,* instead of *per cent promoted.*

We have then as the percentages of the June enrolment which fail of promotion these central tendencies for the grades in order.[2]

| Grades..... | 2 | 3 | 4 | 5 | 6 | 7 | Last grammar | 1H | 2H | 3H | 4H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Medians... | 12.25 | 14. | 14.75 | 16. | 14.25 | 15. | 12.5 | 21 | 20 | 16 | 5 |

As an addition to our table II, we have from Ayres' cities the facts of table IV, and as a central tendency for all the cities with respect to relative lengths of the grades we have,

| Grades..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Last grammar | 1H | 2H | 3H | 4H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Medians... | 160 | 95[3] | 94 | 99.5 | 109 | 102 | 99.5 | 89 | 125 | 125 | 100 | 30.5 |

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[1] Ayres, Leonard P. *Laggards in our Schools.* New York: Charities Publication Committee, 1909, p. 143.

[2] Using the average of the A and B halves of the grades for Manhattan and Brooklyn.

[3] This (95) is the median if Trenton's ratio for grade 2 (not directly reported) is lower than 91. It almost certainly is, for the enrolment is lower than that of grade 3. If Trenton's ratio is 101 or over, the median is 100. If it is 99, the median is 99. If it is 97, the median is 98. If it is 95, the median is 97. If it is 93, the median is 96.

# APPENDIX.

*Sources of the data, with the methods of inferring the June enrolments in the cases where they were not directly given.*

1. *Brooklyn, N. Y.* Tenth Annual Report of the City Superintendent of Schools to the Board of Education of the City of New York for the year ending July 31, 1908, pp. 68-72. Number of pupils on register at end of semester; number of pupils promoted (during the semester as well as at its close); per cent of pupils promoted.

2. *Chester, Pa.* Manual of the Public Schools, 1903, p. 64. Per cent number promoted bears to number enrolled in June. There are records for "Com'l 1st year," and "Com'l 2d year," in addition to those for the regular high school. I have combined them with 1 and 2 of the regular high school.

3. *Chicago, Ill.* Report of the Board of Education for the year ending June 23, 1899, pp. 123 and 242. The number promoted from grade 1 to grade 2, from grade 2 to grade 3, etc.; average daily membership. The proportions of "number promoted" to "average daily membership" are for grades 1 to 12 in order, .683, .815, .848, .862, .794, .804, .789, .862, .731, .729, .814, and 1.02. To estimate the enrolment at the end of the year from the average daily membership, we must decrease the latter for grades where pupils are dropping out during the year (*e. g.*, first year of high school), and increase it for grades where more pupils are entering late than are dropping out early (*e. g.*, first primary grade). Data are lacking to do this with any closeness of approximation. Roughly I estimate the proportions of number promoted to enrolment at end of year for grades 1 to 12 in order as .64, .82, .85, .86, .82, .83, .84, .87, .80, .80, .84, .98.

4. *Columbus, Ohio.* Report of the Public Schools for the year ending August, 1902, p. 200. The number in each grade failing of promotion and the number enrolled at the end of the year.

5. *Elgin, Ill.* Report of the Board of Education for the year ending June 30, 1901, p. 12. Report is made by semesters, but for grades 1, 2, 3, etc., not 1A, 1B, 2A, 2B, etc. Number promoted to next grade; number retained; number in school at the close of the semester in each grade. There is one troublesome feature in the figures for Elgin, namely that it is hard to see how from so large a first grade, with so few held back, so small a second grade results. The figures were given definitely as a measure of the number of failures, and there is presumably some explanation of the difficulty, for instance by a custom of promotion during the year from grade 1A (higher first) to 2B and 2A, 3B and 3A. The comparative enrolment by grades (at the end of the semester) lends some support to this explanation, since the second grade is much smaller than the third, fourth, fifth, and sixth. The

figures are, for the second semester,—grade 1, 614; 2, 365; 3, 416; 4, 435; 5, 458; 6, 447; 7, 300; and 8, 257. The average age of the classes promoted lends further support to this explanation.

6. *Jamestown, N. Y.* Annual Reports for the school years 1897-98 and 1898-99, pp. 21, 22, 28, and 29. Number registered, discharged, promoted at end of year, and not promoted at end of year.

7. *Kansas City, Mo.* Annual Report of the Board of Education for the year ending June 30, 1907, pp. 88-99. Number promoted to each grade; total enrolment in each grade; number spending more than two hundred days in the grades. I infer the June enrolment for each grade with the aid of data given concerning those leaving school permanently in grades 5, 6, and 7, and concerning the number of pupils in attendance less than 20 days, 20-39, 40-59, 60-79, etc. Thus for 1907 I take as the June enrolment for grades 5, 6, and 7, the total enrolment minus the number who left the school permanently, getting 2563, 2095, and 1813 as results; and take also the sum of pupils promoted from the grade and those spending more than two hundred days in it, getting 2903, 2294, and 1839. The averages of the results by these two methods (2733, 2195, and 1826) are sufficiently accurate for our purpose. For grades 1 to 4, I take that percentage of the total enrolment in each grade which the number of pupils attending 140 days or over in grades 1 to 7 and the kindergarten, minus the sum of 2733, 2195, and 1826, and also minus two-thirds of the total enrolment in the kindergarten, is of the total enrolment of grades 1, 2, 3, and 4 respectively. This process gives 4030, 2740, 2720, and 2610, the first three figures being significant in each case. I also take the sum of those promoted from a grade and those recorded as spending more than two hundred days in it, allowing to the first grade 1132 repeaters. This gives 4170, 3259, 3595, and 3351. The averages of the results by these two methods (4100, 3000, 3157, and 2980) are reasonably accurate, except that the actual June enrolment in the first grade may be higher than my estimate. The June enrolment in this grade of pupils who have attended 140 days or more, will bear approximately the same relation to the similar enrolment figures for other grades, as shown by my estimate.

8. *Manhattan, N. Y.* Tenth Annual Report of the City Superintendent of Schools to the Board of Education of the City of New York for the year ending 31, 1908, pp. 68-72. Number of pupils on register at end of semester; number of pupils promoted (during the semester as well as at its close); per cent of pupils promoted.

9. *Pasadena, Cal.* Annual Report for the year ending June, 1899, pp. 68 ff; 1900, p. 37; 1901, pp. 82 ff; 1902, p. 32. Number examined; number promoted; number left over. There is sufficient evidence that the number examined equals the number in the grades at the end of the year.

10. *Rochester, N. Y.* Annual Report of the Public Schools, July,

1897, pp. 7 and 30. Number registered but once; promotions from grade to grade, June, 1897; average daily attendance. The proportions which the numbers promoted are of the numbers registered but once, are for grades 1 to 9 in order,—.589, .834, .814, .814, .779, .783, .737, .735, and .755. The proportions of the average daily attendance are .807, .994, .951, .951, .924, .930, .850, .861, and .789. I estimate that the proportions of those enrolled at the end of the year would be roughly .641, .856, .836, .838, .820, .847, .784, .800, and .765.

11. *San Francisco, Cal.* Annual Report of the Public Schools for the year ending June 30, 1892, p. 7. Number promoted and number who failed. Besides the usual eight grades, San Francisco had in 1892 a "receiving class". If we treat this as a true first grade, making nine in all, the numbers in tables I and II for San Francisco should all be pushed on one year.

12. *Stockton, Cal.* School Report for 1892-93, pp. 61-64. Number promoted; number not promoted; total enrolment by grades.

13. *Trenton, N. J.* Annual Report of the Commissioners of Public Instruction for the year ending August 31, 1896, p. 162; 1897, p. 204. Number in grade at end of year; per cent promoted, given for grades 3 to 8 only.

14. *Utica, N. Y.* Annual Report of the Public Schools, 1900, p. 33; 1901, p. 27; 1902, p. 25. Number in class at close of year; number promoted (divided into "fully qualified" and others promoted); number held back. Reported for primary, intermediate, and advanced grades of a nine grade system. Reported separately for the three advanced grades in the case of a school containing about three-fourths of them. I have distributed the percentages for the advanced grades according to the distribution for this impartially selected majority of them.

15. *Wheeling, W. Va.* Annual Report of the Public Schools for the year ending July 31, 1907, p. 19. Number remaining in each grade; number promoted to each grade. The number enrolled at the end of the year has to be inferred in the case of grade 8 from the total enrolment. I have taken that proportion which the end-of-the-year enrolment is of the total enrolment in grades 6 and 7.

The reasons why my data are so often for the years around 1900 instead of later are, first, that I wished to use them as mentioned on p. 8 of "The Elimination of Pupils from School", to estimate elimination from data of grade populations for the years around 1900; and secondly, that I had already some considerable familiarity with and convenient access to school reports of that date.

(*To be concluded.*)

## REVIEWS AND CRITICISM.

*Parenthood and Race Culture.* By C. W. Saleeby, M.D. New York: Moffat, Yard & Co., 1909.

Dr. Saleeby, whose excursion into journalistic medicine as an upholder of a so-called cancer-cure may readily be pardoned him in consideration of his really valuable later work, calls himself a eugenist, and as such has written a book on parenthood and race culture which should be a real help to those who are trying to solve the social problem in its complicated moral relation to human society. The term eugenist in the popular mind stands for a startling revolutionary materialist, but so far at least as Dr. Saleeby and his school are concerned, a eugenist is a man who is devoting heart and mind to the improvement of the race, a man who believes that only by using the scientific knowledge of to-day to provide a better race for to-morrow, can we do our duty and justify our existence. The moral and intellectual, the spiritual and ethical qualities of human nature are the ones pre-eminently for which to strive, but the physical side cannot be neglected because of its influence on the psychic. This in brief is the creed in which Dr. Saleeby and his predecessor, Mr. Galton, believe, and apart from a rather unpleasant nomenclature, which it would in no wise injure the purport of the book to omit, there is nothing either startling or materialistic about his philosophy. The book is constructive rather than destructive, and aims towards establishing a plan of action which, if followed, will do away in the future with some of the most difficult and depressing of our present conditions. We may note here Dr. Saleeby's quotation from Mr. Galton: "The aim of eugenics is to bring as many influences as can be reasonably employed, to cause the useful classes in the community to contribute more than their proportion to the next generation."

The first half of the book is devoted to a discussion of development of the race, the historical tracing of the natural law of selection which has produced progress, and the discussion of those elementary qualities which have the greatest "survival value". He discusses at length the question of the value of education versus, or rather combined with, heredity, and here it may be of interest to quote—"Let not the reader, therefore, suppose that in the advocacy of eugenics or race-culture we have become blinded to the possibilities offered us by reasonable education even of the very heterogeneous material offered us by heredity. Yet it must be maintained that, though we cannot do without education, and though something infinitely better than we practice at present will be necessary if the ideal of race-culture is ever to be realized, yet education alone, however good, can never enable us to achieve our end." "We have to learn, however, that the analogy is not one of addition but of multiplication. Neither inheritance nor environment, as such, gives anything.

The environment factor may be potentially one hundred—an ideal education—but the innate or inherited factor may be nothing, as when the pupil is a door-mat or a fool. The result then is nothing. Darwin had the trombone played to a plant, but he did not make a Palestrina. No academy of music will make a beetroot into a Beethoven, though I daresay a well-trained beetroot might write a musical comedy. The point is that one hundred multiplied by nothing equals nothing. Similarly, the innate factor may be one hundred, as in the case of a potential genius, but he may be brought up upon alcohol and curses amongst savages, and the result again is nothing."

Dr. Saleeby does not ally the eugenist with any school of thought, and in speaking of Socialism he says—"We cannot agree with Socialism when, as we think, it assumes that all evil is of economic or educational origin. The student of heredity finds elements of evil abundant in poisoned germ-plasm and not absent from the best. Surely, surely, the products of progress are not mechanisms but men; and surely no economic system as such can be the only mechanism worth naming—which would be one that made men." Dr. Saleeby lays stress upon the psychic, moral, spiritual or emotional value as you choose to describe it, of parenthood, as against those philosophers who believe in the human stud-farm. He describes the historical development of the parental attitude from the earliest creatures to man, and says distinctly that in proportion as the parental care has developed, so has the species also improved and progressed. He says in speaking of the supremacy of motherhood—"it is worth noting that motherhood cannot safely be superseded. I do not believe in the crèche or the municipal milk depot except as stop-gaps, or as object-lessons for those who imagine that the slaughtered babies are not slaughtered but die of inherent defect, and that therefore infant mortality is a eugenic process. In working for the reduction of this evil we must work through and by motherhood. In some future age, displaying the elements of sanity, our girls will be instructed in these matters."

His views upon monogamic marriage are exceedingly sane and based upon high ideals. After discussing the development of the marriage relation through the animals and the earlier races, he says—"The point especially to be insisted upon as regards even animal marriage is its evident service to their race-culture, in accordance with the principle here laid down that marriage is of value because it supports motherhood and fatherhood, and that its different forms are of value in proportion as they do so more or less effectively." In speaking of human marriage he says—"We must turn now to human marriage, and the principle which we must remember is that of survival value. We are discussing a natural phenomenon exhibited by living creatures. This is what so few people realize when they speak of marriage. They cannot disabuse themselves of the idea that it is a human invention, and especially an ecclesiastical invention. Thus, on one hand, it is supported by persons who base its claims on mystical or dogmatic grounds; whilst, on the other hand, it is attacked by those who are opposed to ecclesiasticism or religion of any kind, and attacked in the name of science—in which, if the fact could only be recognized, is found every possible warrant and sanction, and indeed imperative demand, for this most precious of all institutions. Here we must endeavor to look upon it as an exceedingly ancient fact of life, vastly more ancient than mankind; and judging it and explaining it we must apply Nature's universal criterion, which is that of its survival-value or service to race-culture."

The second half of the book is devoted to the discussion of the practical means which we have at hand to produce the desired result. These means he divides into two parts, negative eugenics and positive eugenics. "Positive eugenics must largely take the form at present of removing such disabilities as now weigh upon the desirable members of the community, especially of the prudent sort." For instance, he points out that the income tax provisions especially under the laws of England tend towards making the burdens of the married much greater than those of the unmarried. "It is in negative eugenics," he feels, "that we can accomplish most at this stage, and in so doing can steadily educate public opinion." "There is a field for action which does not demand a general revolution, nor does it require us to wait for certainty until the facts, the laws of heredity, etc., have been fully illustrated." "As Thoreau observes, for a thousand who are lopping off the branches of an evil there is but one striking at its roots. If we strike at the roots of certain grave and costly evils of the present day, we shall abundantly demonstrate that this is a matter of the most vital economy."

Dr. Saleeby speaks of the problem of the multiplication, largely by inheritance, of the deaf and dumb, the feebleminded, the insane, the criminal, the epileptic. While he feels very strongly about allowing such individuals the right to multiply, his recommendations about surgical or other radical interventions are safe and conservative. He makes one point which seems exceedingly useful and worthy of close study. "This point, as to the amount of hardship involved in the observance of negative race-culture, has always to be kept in mind. If negative eugenics were generally enforced upon a given generation some persons would, of course, suffer in greater or less degree from the disabilities imposed upon them. But their number would depend upon the neglect of eugenics by previous generations, and thereafter the number of those upon whom our principles pressed hardly would be relatively minute." "Negative eugenics will seek to define the diseases and defects which are really hereditary, to name those the transmission of which is already certainly known to occur, and to raise the average of the race by interfering as far as may be with the parenthood of persons suffering from these transmissible disorders." Recognizing the monogamic marriage as the ideal way of continuing the race, he believes that in educating the race towards realizing the responsibility of parenthood, we will obtain the highest result of natural selection. He believes that this process has, as a matter of fact, been going on unconsciously for many generations. How much more will it not accomplish when consciously and conscientiously directed! He has several practical suggestions to make toward this end which it would be impossible to quote at length.

Next come the chapters devoted to the racial poisons, alcohol, lead, narcotics and syphilis. To the first he devotes most time as being perhaps still the most debatable ground. His argument is that parenthood must be forbidden to the dipsomaniac, the chronic inebriate, or the drunkard, whether male or female. His argument is distinctly in line with the little book entitled "Alcohol" by Dr. Henry Smith Williams, which has just been published and will prove interesting and instructive reading to any who care to go more particularly into the subject. About the other poisons he speaks more briefly, and commends to those who wish to know more about it, books on the individual subjects. He gives valuable hints to the medical profession and speaks in many parts of the book of the need of more knowledge on many of the physical and psychological questions involved. A very interesting chapter is devoted to the question of the historical development of race culture and the promise of race culture. And following are a useful appendix with many authorities quoted, a full index and some mention of the various societies which can supply one with literature by those who are working towards eugenic education.

The somewhat didactic method in which Dr. Saleeby states certain rather debatable questions is to be regretted in so far as it detracts from the permanent value of the book which is a practical philosophy on which to base action rather than a scientific treatise. The main plan and purpose of the book is clear and reasonable and fine, but the author's personal beliefs about many subjects are rather irrelevant and unessential, and not always firmly based upon undisputed knowledge. His treatment of the question of heredity may be cited as an instance of the above, many pages being taken up in discussing the terms which describe that which we may and may not bequeath to our children. Like all enthusiasts, like all prophets, the spirit and the result to be striven for are so clearly before Dr. Saleeby as he writes that sometimes the paths of logic whereby he has reached the rock of decision are somewhat obscure to the reader. The book is aimed to reach teachers, parents, and practical social workers, indeed all who have the good of the community at heart.

M. G. F.

## NEWS AND COMMENT.

*Münsterberg Replies to Criticism.*

In the January and February numbers of THE PSYCHOLOGICAL CLINIC for 1909 appeared a criticism of some of the scientific work of Professors Münsterberg, James and Royce. Up to the present time no published answer has been made to this criticism. Professor Münsterberg, however, has not been inactive. Rumor had it that he wrote to the Council of the American Psychological Association, stating that he could not invite the Association to hold its recent meeting in Emerson Hall so long as Professor Witmer remained a member of the Association, and suggesting at least by implication that Professor Witmer be expelled from membership prior to the last annual meeting. Professor Witmer therefore introduced at the business session of the annual meeting a resolution requesting the President and Council of the American Psychological Association to forward to him a copy of the correspondence had between them and Professor Münsterberg in relation to this matter.

The President of the Association hereupon turned lawyer, and ruled the resolution out of order on the quibble that no such letter had been received by the Council from Professor Münsterberg. Professor Münsterberg, however, saved the situation for Professor Witmer, and stated that he had written a letter to the Council or to members of the Council, in which he had taken up the cudgels in behalf of his colleagues, Professors James and Royce (modesty perhaps forbade him to act in this matter in his own behalf). In this letter he said that he could not invite to Emerson Hall, devoted as it was to the highest traditions of scholarship, an Association which included among its membership one who had insulted with his criticism men of the standing of his two colleagues.

To meet this covert attack of Professor Münsterberg, it is sufficient to give the widest publicity possible to Profesor Münsterberg's method of answering scientific criticism. It is worth asking, however, by what right a member of the faculty of Harvard University can exclude from any of its buildings one who is personally distasteful to himself. It is hardly credible that Professor Münsterberg acted in this matter with the authority of the President and Corporation of the institution which he represents, and from whom he acquires his only authority over Emerson Hall and his own laboratory of psychology. The distinguished philosopher whose name adorns the building from which Professor Münsterberg sought to exclude his critic would be the first, were he alive, to appreciate the irony of the situation. No one stood more frankly for freedom of speech and thought than Emerson.

The Psychological Clinic

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# THE READING FREE DENTAL DISPENSARY.

By George S. Schlegel, D.D.S.,

*Secretary Reading Free Dental Dispensary Board.*

The free dental clinic, apart from the clinic connected with a dental college, is a new form of public charity. Europe and Australia have taken the initiative in this important work. The United States, however, is alive to the necessity for free dental service, and at the present time movements are on foot among dentists and dental organizations, getting information, and planning and securing the necessary funds to establish such public charities.

The Reading Free Dental Dispensary is one of the first ten to be established in this country and certainly the first one on record in the state of Pennsylvania. At intervals during the past ten years, members of the Reading Dental Society have agitated the necessity of giving free dental service to the indigent poor of our city. The main obstacles were the lack of suitable rooms, and a modern equipment. To impress upon City Councils or the Board of Education the necessity of such a charity, without some statistics to prove our assertions, would no doubt have proved fruitless. However, it was our good fortune to find a philanthropic citizen who volunteered to raise the necessary funds not only to fully equip a dispensary, but to furnish the money to supply it with materials, etc., for one year.

The members of the Reading Dental Society grasped the opportunity at once and signed the following resolution, which showed how eager they were to do a public service:

Whereas, We the undersigned have agreed to contribute not less than four dollars each, towards a fund to be used for the equipment of a free dental dispensary in Reading, Pa.;

*Be it resolved,* That we the undersigned promote the interests of this Free Dental Dispensary, by giving our service gratis, to

THE FREE DENTAL DISPENSARY OF READING, PA.

all persons duly qualified, who report at the dispensary for any service provided for in the rules of the dispensary. The frequency and order of attendance of each dentist to be determined by the Reading Dental Society. This obligation shall remain in force as long as any of us the undersigned are in legitimate and active practice in Reading, Pa.

The society started the fund by subscribing over a hundred dollars. This was made compulsory by our financier, because he wanted us to feel that we had not only a charitable interest in the work but also a financial interest, in other words that it belonged to us,. the Reading Dental Society.

The members pledged themselves on Thursday, January 7, 1909, and after a delay of two months to arrange details, signed the above resolution on April 1st. The Dental Dispensary committee, which was a standing committee for years, but which never delayed meetings with any exhaustive reports, immediately selected a location and equipment, and on May 28th, we sent all our prominent business men, school directors, city officials, and others, an announcement that June 1st would be inspection day at the Reading Free Dental Dispensary. The first man reported for duty on June 2, 1909. In less than five months with two months of unavoidable delay, we founded, equipped and paid for this necessary charity.

Our equipment is modern in every particular and includes electrical engine and fan, electric water heater and atomizer, compressed air outfit, hydraulic chair, dental cabinet, sterilizer, dental laboratory bench, roll top desk, record system, and telephone. The rooms were furnished with linoleum, rugs, clothes tree, etc., through the generosity of local firms.

The organization of the dental dispensary will be made clear by the following resolutions and rules adopted by the Reading Dental Society:—

*Resolved* that the following shall be a standing resolution of the Reading Dental Society,—

> Sec. 1. The dispensary shall be known as the Reading Free Dental Dispensary.
>
> Sec. 2. There shall be a board for the management of the dispensary to be known as the Dispensary Board.
>
> Sec. 3. This board shall consist of six members

in active practice, who shall be in good standing in the Reading Dental Society.

Sec. 4. The members of the first board shall be elected at the annual meeting as follows:—two for one year, two for two years, two for three years, and at each succeeding annual meeting, two shall be elected for three years.

Sec. 5. Vacancies occurring shall be filled by special election.

Sec. 6. The operators shall serve in the order in which their names are affixed to the Constitution.

Sec. 7. The Dispensary Board shall present a written report at each annual meeting.

### Rules.

1. The management of this Dispensary shall be in the hands of the Dispensary Board of the Reading Dental Society.

2. This Dispensary will be open from 1.30 to 5 o'clock daily, except Saturdays and Sundays and legal holidays, and such days as the Board may designate.

3. All property of the Dispensary shall be in charge of an assistant, who shall be held responsible to the Dispensary Board for its safe keeping, and who shall dispense instruments, materials, etc., as required by the various operators, from the reserve stock.

4. The assistant shall also keep a record of supplies needed, and shall attend to the ordering of various materials as directed by the Dispensary Board. It shall also be the duty of the assistant to keep records of all operations.

5. No person shall receive free dental services without the endorsement of the Associated Charities.

6. If any operator is unable to be present on his appointed day, it shall be his duty to provide a substitute; the said operator shall be responsible for the appearance of the substitute.

The patients are received through the Associated Charities from the public schools and the general public. The teachers of the public schools are provided with blanks to be filled out by them. The form of the blank is as follows:

## APPLICATION FOR FREE DENTAL SERVICE.

To be approved by
Associated Charities, 539 Franklin Street.
Hours: 9 to 12 a. m., 2 to 5 p. m.
Saturday afternoons excepted.

Dental Dispensary, 114 S. Sixth Street
Hours: 1.30 to 5 p. m.
Saturdays excepted.

Name ..............................................
Address ..........................................
Age ......................... Grade ...................
Name of Parents ..................................
Occupation of Parents ............................
Name of Teacher ..................................
Name of Principal.................................
or
Name of Supervisor................................
Location of School................................

Note.—Additional application blanks can be procured at the office of Associated Charities.

The dispensary employs a competent woman assistant, who makes appointments with patients, records all operations and sterilizes all instruments; a sort of *chargé d'affaires*. Where twenty-five different men operate in rotation it is absolutely necessary to have some one person constantly in attendance.

The dispensary has been in operation for about seven months, and like all new work it has taken some time to become well known. The summer months were not productive of a great demand for free dental service because the schools were closed. However, taking everything into consideration the dispensary is a success, and we hope to make a fine annual report by January 1, 1911. We are doing everything we can to bring to the notice of our public school teachers the mental and physical improvement which may be brought about through proper care of children's teeth. With this end in view E. C. Kirk, D.D.S., Sc.D., Dean of the Dental Department of the University of Pennsylvania, lectured at a teachers' institute in Reading, October 30, 1909, on "The Dental Disabilities of School Children".[1]

The patients who received treatment during the brief existence of the dispensary, have been for the most part of a slightly higher grade than we hoped to reach. The very poorest class must first be taught the value of saving their teeth, and this will require time. However, we realize that a dental charity must be carried out on a higher plane than a soup house. Many parents earn enough to keep their children supplied with simple food and clothing, but no more; to pay for dental service is entirely out of the question. So far we have worked mostly for this class, but we hope to reach the poorer classes later. We have also done a great deal for children from orphanages. If the patient does not possess a tooth brush and cannot afford to buy one, the dispensary furnishes one together with tooth paste or powder, and the proper instructions for their use. This movement is both educational and charitable.

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[1] The Psychological Clinic, Vol. III, No. 8, p. 217.

Dental inspection in the Reading Public Schools will begin with the September session in 1910, possibly sooner. The members of the Reading Dental Society have volunteered to make an examination of the eight grades of the public school of the city, numbering 10,000 pupils. All these influences must bring pressure to bear in the direction of better teeth, hygienic mouths, and perfect health.

In closing this article I wish to make an appeal to all educational authorities, to interest themselves in this great work. Don't wait for the dentists to begin the work for you. Dentists are slow to come forward in some localities, and a little urging on your part may be productive of a vast amount of good. The public school system is intended to develop a child's mind and body. This cannot be accomplished as long as the child's capabilities are constantly or intermittently reduced by some physical infirmity, and decayed teeth are very often the causes of grave physical or mental defects. Therefore it behooves all who claim to be educators or caretakers of the human economy to reduce every active cause of deficiency in the individual to a minimum. Co-operation is the keynote of this, as of every other important movement for social betterment.

# PROMOTION, RETARDATION, AND ELIMINATION.

By Edward L. Thorndike, Ph.D.,

*Teachers College, Columbia University.*

## II.

### *Promotion and the Course of Study.*

It is desirable that the course of study should be stated in terms of objective achievement grade by grade, so that teachers may know what their pupils are supposed to accomplish.[1] It would be desirable also to have this series of stages of achievement correspond to equal time-units for the average, or better, the modal child, *i. e.* to have each grade in succession represent what would be a year's or half year's work for him *if all the children stayed to complete the course,* or if elimination were random with respect to school ability.[2] As things are, it is desirable to have each grade represent a year's or a half year's work for the modal child *who enters that grade.* There is no demonstrable tendency in the city schools as a group to depart from the second standard, except in the first grade. Individual cities, of course, may seem to be acting unwisely in making ostensibly equal grades really very unequal. Before passing judgment on any city, however, its practice over several years must be studied and all the circumstances determining its policy must be considered. The apparent departure of making grade eight too short as compared with grades three to seven, may be entirely due to the greater elimination during the year in grade eight of those who, if they stayed, would fail of promotion. The same fact must be considered in connection with the apparent shortness of the third and fourth years of the high school, although in this case there is perhaps a real error in making the first year of the high school too hard in comparison with the last two.

The first grade is probably longer for those who enter it than later grades are for those who enter them, although of course not nearly so much longer as it seems. The best practical solution may be, not to lessen its work, but to add an easier preparatory grade and admit to the first grade only the pupils who are ready for it—those who can reach the standard of the modal pupil in the normal time.

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[1] With allowances, of course, first for individual differences among pupils, the work of a grade not being required to be done by all with exactly the same degree of excellence; and secondly for different courses of study for different types of pupil.

[2] The reasons for this are economy and convenience. More rapid courses for more gifted pupils might well crowd the work in some semesters and relax it in others with still greater economy. On the other hand, slower courses might at times be more economical.

### *Promotion and Retardation.*

Retardation is commonly taken to mean the fact that a pupil is in a lower grade than he would be if he had begun school at the usual age and had progressed one grade each year. This raises certain difficulties in making allowance for systems which give seven or nine grades to the work usually done in eight, and lacks the objectivity and uniformity which would be gained if we could establish certain definite amounts of achievement in terms of knowledge, power, skill, etc., to be expected at each age, and could use "retardation" for the degree of inferiority of a child to the amount of achievement to be expected at his age. But until such standards of school progress are available, and until children are measured by them, we may profitably use the customary definition of retardation.

Accepting this definition of retardation, our figures suggest two facts not hitherto sufficiently emphasized. There is no support whatever in fact for the doctrine that the retarding force is greater in the early than in the later grades (grade one being left out of the question). Indeed, *the same pupil* will commonly spend a considerably *longer* time in grades six, seven, and eight than in grades two, three, and four. Certain pupils are not retarded in grades six, seven, and eight for the sole reason that they are not there to be retarded,—they have been eliminated. If all pupils stayed in school until twenty, and the present standards of promotion were maintained, retardation would be measurably greater in grades six, seven, and eight, than in grades two, three, and four.

In these facts of promotion and failure there is no support whatever for the doctrine that retardation by non-promotion at the end of the year is an injustice to the pupil retarded. As a matter of fact, there is probably far more injustice done to the gifted one-seventh who are not promoted "doubly," *i. e.* allowed to complete a grade in less than a year, than is done to the one-seventh who fail of promotion in one year. Systems of promotion need to be fitted to individual differences in capacity, to be made more *flexible,* rather than to be made *easier* for those who now fail. It is of course true that teachers may exaggerate the importance of satisfactory achievement in one grade as a prerequisite for success in the following grade, that they may exaggerate the bad effects upon the zeal of a school from treating competent and incompetent pupils alike in promotion, and that they may even be stupidly unjust in a few cases. But with rare exceptions, teachers refuse promotion to a pupil only because they honestly think he is not fit to do the work of the next grade, and that it is for the common good not to let him attempt it; and in a majority of cases they are right. Special industrial and trade schools in which pupils who make slow progress in the typical elementary schools could be given a trial at another sort of education, would be more to the advantage of the eleven year old pupils now found in the third grade, the twelve year olds in the fourth, and the thirteen year olds in the fifth grade, than such a relaxation of standards in the typical school as would allow the less scholarly children to progress in it at the speed now expected of the modal child.

### *Promotion and Elimination.*

The estimates of elimination by grades, reported by the author in "The Elimination of Pupils from School," have been attacked on the ground that the percentages of "hold-over" or repeating pupils are far larger in the earlier grades than in the later, and that adequate correction was not made for this fact. I have elsewhere shown that I did make this correction, and now shall show that my correction was adequate.

We can estimate the number of pupils who continue to any given grade in two ways. What these are will be clearer, if we take first an arbitrarily simple case and analyze it. Suppose first that for thirty years or so the population of a community is stationary, that no ones dies before twenty-five, that there is no immigration or emigration, that one hundred pupils begin school each year, that every one stays in school until the end of the high school, and that every one begins at the beginning and spends just one year in each grade. Then the number of pupils in each grade will be one hundred. Suppose that in each grade all of those entering it spend just two years; the number in each grade will be two hundred, or twice as large as the number beginning school in one year. Suppose that in each grade 84 per cent of those entering it stay just one year, and 16 per cent just two years.

After such action has been under way long enough, the numbers in all the grades will still be alike, but each will be one hundred and sixteen, or 16 per cent larger than the number beginning school in any one year.

Suppose now that of those entering each grade 84 per cent stay just one year and 16 per cent just two years, and also that in every year of the thirty years one-half of the children in the sixth grade in June leave school. Then we should have as the relative sizes of our grades in the middle of thirty year period 116, 116, 116, 116, 116, 116, 58, 58, 58, 58, etc. The proportion which grade seven was *of any early grade* would represent the proportion of pupils beginning school who continued to the seventh grade, which is, of course, one-half. The proportion which the seventh grade was *of the number beginning school in one year* (58 per cent) would be an overestimate of the proportion continuing in school to the seventh grade, for the same reason that the process in the sixth grade would give 116 per cent continuing in school. What is required is the proportion which the number beginning the seventh grade *in one year* is of the number beginning school in one year. This case may be generalized in the form of two laws:—1. Disregarding growth of population, immigration, emigration, and death, if the rate of progress in a grade of those entering it, *i. e.* the frequency and degree of their retardation or acceleration, is equal for all grades, any decrease of a later as compared with earlier grades is due to elimination; and 2. Disregarding as before all factors save retardation and elimination, if in any grade there is an excess of retardation over acceleration, the ratio of those found in that grade at the beginning of one year, if there has been zero elimination, will be over 100 per cent of those beginning school in one year, and by an excess proportionate to the excess of retardation in that grade.

It is therefore obvious that the percentage of pupils beginning school who are retained to any grade, can not be measured by the percentage which the pupils in that grade are of the number beginning school in one year. If the latter figure is taken as a base, the other figure must be *those beginning that grade in one year.*

Mr. Ayres is right in supposing that when age enrolments are given, the number of pupils beginning school in one year can be inferred with substantial accuracy from them, but he is obviously wrong in supposing that the ratios of the enrolment of the later grades to the number beginning school in one year measure the retention to those grades.

If retardation is equal in all grades, then, as we have seen, the numbers in the grades at the beginning of the year give us by their differences the elimination (disregarding growth of population, etc.). If it is unequal, we must correct for it. We have shown that it is approximately equal from the second grade to the third year of the high school inclusive, in the sense that in any June the proportion of pupils destined, if they stay in school, to repeat the grade, is for these grades in order .1225, .14, .1475, .16, .1425, .15, .125, .21, .20, .16, .05. But it is likely that those so destined will leave school before the next year's enrolment record is taken, more often than will those who did not fail; and it is likely that this excess elimination of those who fail will be greater in the higher grades than in the lower.

This implies the possible need of a second correction, for the excess elimination of non-promoted over promoted pupils, and for the increase in this excess as we pass to later and later years. The data of table V, taken in conjunction with the percentages failing of promotion, allow an impartial though not precise estimate to be made.

TABLE V.

DATA SHOWING INVERSE CORRELATION BETWEEN FAILURES AND RAPID PROMOTIONS.

| GRADES | GALESBURG, ILL. | KANSAS CITY, MO. | | SPRINGFIELD, ILL. | | WILLIAMSPORT, PA. | |
|---|---|---|---|---|---|---|---|
| | Per cent of pupils completing grade, who require more than one year to complete it. | Per cent of total enrolment remaining more than 200 days in the grade. | | Per cent of June enrolment remaining more than one year in the grade. | | Per cent of June enrolment remaining more than 180 days in the grade. | |
| | 1898 | 1905 | 1907 | 1907 | 1908 | 1907 | 1908 |
| 1 | 26.3 | 15.9 | 15.8 | 27.6 | 24.8 | 27.1 | 20.5 |
| 2 | 13.3 | 12.5 | 13.8 | 16.5 | 21.1 | 17.1 | 11.5 |
| 3 | 23.6 | 16.3 | 19.8 | 15.9 | 18.7 | 18.1 | 13.6 |
| 4 | 17.5 | 19.8 | 26.4 | 15.9 | 14.7 | 20.4 | 14.3 |
| 5 | 17.4 | 16.5 | 28.3 | 12.6 | 14.2 | 12.3 | 14.2 |
| 6 | 31.8 | 17.8 | 24.7 | 12.6 | 11.1 | 8.9 | 11.4 |
| 7 | 26.3 | 10.0 | 15.3 | 2.9 | 5.7 | 11.7 | 8.6 |
| 8 | 45.0 | | | 2.6 | 1.3 | 9.8 | 5.6 |
| 9 | | | | | | 8.9 | 6.1 |
| 1 H | | | | 4.8 | 13.9 | | |
| 2 H | | | | 6.8 | 12.5 | | |
| 3 H | | | | 1.1 | 6.1 | | |
| 4 H | | | | 0 | 0 | | |

The figures for Kansas City, Mo., 1907, Springfield, Ill., 1907, and Williamsport, Pa., 1908, are taken from Ayres, L. P., *Laggards in our Schools*, p. 75.

In reasoning from these facts we must consider first that Springfield and Williamsport are cities which from grade seven to the last grammar grade have very much lower percentages of non-promotions than do cities in general, and that consequently these bare percentages of repeaters make the retention of pupils who fail in any given year seem lower than it would be in cities in general. What we should use is not the relative frequency in the different grades of pupils repeating the grade, but the relative value in the different grades of the ratio of pupils repeating, to the pupils failing of promotion. These facts are given in table VI.

TABLE VI.

PER CENT OF PUPILS FAILING OF PROMOTION WHO REMAIN OVER A YEAR IN THE SAME GRADE.

| Grade | Springfield 1907 and 1908 | Williamsport 1907 and 1908 |
|---|---|---|
| 1 | 138 | 73 |
| 2 | 114 | 73 |
| 3 | 96 | 74 |
| 4 | 102 | 79 |
| 5 | 89 | 60 |
| 6 | 68 | 63 |
| 7 | 39 | 70 |
| 8 | 45 | 77 |
| 9 | | 79 |
| 1 H | 60 | |
| 2 H | 47 | |
| 3 H | 18 | |
| 4 H | 0 | |

These statistics are somewhat mysterious if taken at their face value. In Springfield, the pupils in the early grades seem to repeat a grade although promoted from it; in Williamsport, even in grades one, two, and three, over one-fourth of the pupils failing of promotion seem to be eliminated from school; and in Kansas City, by any rational estimate whatever of June enrolments, there still results the appearance of a large number of pupils in grades two to six (next to the last grammar) inclusive, who spend over a year in a grade without being recorded as having failed of promotion in it![3] Obviously we need to know just how the figures were computed in the superintendents' offices before we can interpret them.

One fact is certain,—pupils who fail of promotion even as late as the third year of the high school do remain in school and make the grade's enrolment larger than the number beginning it in one year. The following statements are probably also true. In Williamsport the likelihood of a "failure" becoming a "repeater" the following year is as great in the last three grades as in the first three (see table VI). In Springfield one-tenth of the failures in grade five seem to be eliminated before the next year's enrolment is counted, one-third of those in grade six, nearly three-fifths of those in grades seven and eight, and two-fifths, one half, and four fifths, for the first, second, and third years respectively of the high school. In Galesburg those who fail in grades six, seven, and eight, must continue in school nearly if not quite as often and as long as those who do not fail; otherwise there could not be so many pupils repeating these grades. Kansas City occupies a position with respect to the elimination of failures in late grades between Springfield and Williamsport.

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[3] This is to be explained by the system of promotion in vogue in Kansas City. A class may be advanced from one grade to the next at any time of the year, when the work of the previous grade has been covered.

On the whole I estimate that of pupils failing of promotion in the last grammar grade about one-third are eliminated before the next year's enrolment is counted; of pupils failing in the next to the last grammar grade, about one-fourth; of pupils in the sixth grade, about one-fifth; and of pupils in the fifth grade about one-sixth. If these estimates are fair, the failures in grades six, seven, and eight continue to the following year at least eight-tenths as often as those promoted. At all events, Mr. Ayres is certainly wrong in supposing that only "a few—a very few—pupils get to the seventh or eighth grade, fail of promotion, and repeat the work of the grade."[4] In Galesburg about half of the last grammar grade is made up of such repeaters, and in Kansas City about one eighth. In Springfield about half of those failing repeat the grade, and in Williamsport four-fifths.

I shall now show that Ayres' method of estimating elimination by comparing the number beginning school in one year with the number continuing to the later grades, if properly applied, gives substantially the same estimates of elimination as those in "The Elimination of Pupils from School".

Consider first the following facts:—of the pupils enrolled in June in grades two, three, four, and five, 12.3 per cent, 14 per cent, 14.8 per cent, and 16 per cent respectively fail of promotion; 87.7 per cent, 86 per cent, 85.2 per cent, and 84 per cent respectively are promoted.

Call the number of pupils at the beginning of one year in grades two, three, four, and five, Pop. 2, Pop. 3, Pop. 4, and Pop. 5, respectively.

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[4] Ayres, Leonard P. *Laggards in our Schools*, p. 93.

Call the number failing in one year, f2, f3, f4, and f5, respectively.

Call the number promoted in one year, p2, p3, p4, and p5, respectively.

Call the number skipping one of these grades in one year, s2, s3, s4, and s5, respectively.

Call the number eliminated from school in one year, otherwise than by death, *before reaching the grade*, e2, e3, e4, and e5, respectively.

Then, disregarding increase of population, death, and migration into and out of the school system,

$$\text{(1)} \quad \text{Pop. } 3 = p2 + f3 + s2 - s3 - e3$$
$$\text{(2)} \quad \text{Pop. } 4 = p3 + f4 + s3 - s4 - e4$$
$$\text{(3)} \quad \text{Pop. } 5 = p4 + f5 + s4 - s5 - e5$$

Since s2 = s3 = s4 = s5 approximately, the equations (1), (2), and (3) become

$$\text{(4)} \quad \text{Pop. } 3 = p2 + f3 - e3$$
$$\text{(5)} \quad \text{Pop. } 4 = p3 + f4 - e4$$
$$\text{(6)} \quad \text{Pop. } 5 = p4 + f5 - e5$$

Suppose now that Ayres were correct in his supposition that there is no elimination in grades two, three, and four (that is, e3, e4, and e5 all equal 0), and in his estimate that

Pop. 2 = 1.29 × the number beginning school in one year
Pop. 3 = 1.28 × " " " " " " "
Pop. 4 = 1.20 × " " " " " " "
Pop. 5 = 1.06 × " " " " " " "

Call the number beginning school in one year, A, then

$$1.28 \text{ A should} = (p2 + f3) \text{ or } [(87.7 \times 1.29 \text{ A}) + (14 \times 1.28 \text{ A})]$$
$$1.20 \text{ A } \text{"} = (p3 + f4) \text{ or } [(86 \times 1.28 \text{ A}) + (14.8 \times 1.20 \text{ A})]$$
$$1.06 \text{ A } \text{"} = (p4 + f5) \text{ or } [(85.2 \times 1.20 \text{ A}) + (14.3 \times 1.06 \text{ A})]$$

But they do not. The numbers required to satisfy the equations are 1.31, 1.28, and 1.17. In other words, as will be made clear later, Ayres' 1.28, 1.20, and 1.06 are too high.

Call the numbers beginning these grades in one year, b3, b4, and b5. Since s2 = s3 = s4 = s5, if there is no elimination (death, increase of population and migration being disregarded) b3 = p2, b4 = p3, and b5 = p4. Then if Ayres' suppositions were correct,

$$\text{b3 should} = (87.7 \times 1.29 \text{ A}) \text{ or } 1.10 \text{ A}$$
$$\text{b4 } \text{"} = (86 \times 1.28 \text{ A}) \text{ or } 1.03 \text{ A}$$
$$\text{b5 } \text{"} = (85.2 \times 1.20 \text{ A}) \text{ or } .92 \text{ A}$$

But these results (1.10 A, 1.03 A, and .92 A) are absurd, for the numbers of pupils beginning these grades in one year should, if there is no elimination, be each 1.00 A. Ayres' ratios for Pop. 3, Pop. 4, and Pop. 5 to A of 1.28, 1.20, and 1.06, are therefore too high, and unless e3, e4, and e5 are positive quantities, the ratios are also in wrong proportions to one another. To be correct they must give results for b3 Pop. 3, b4 Pop. 4, and b5 Pop. 5, as .964, .938, and .920, if account is kept of increase of population and death; or if account is kept of these two factors otherwise, as Ayres[5] says is done by him, they must give results summing to approximately 3.00 and in a progression paralleling .964, .938, and .920. His 1.28, 1.20, and 1.06 are incorrect in all being too large and in decreasing relatively too rapidly.

Consider now what results if, first, we divide Ayres' 1.29, 1.28, 1.20, and 1.06 all by 1.13; that is, assume that he overestimates the ratios of grade populations to number of pupils beginning school in one year, by 13 per cent, so that the true ratios are 1.14, 1.13, 1.06, and .94; and if, secondly, we assume also that the figures for e3, e4, and e5 which I gave in "The Elimination of Pupils from School" are correct (e3 = .03 A, e4 = .07 A, and d5 = .09 A). We then have

$$\text{Pop. } 3 = (87.7 \times 1.14\ \text{A}) + (11 \times 1.13\ \text{A}) + .03\ \text{A}$$
$$\text{Pop. } 4 = (86 \times 1.13\ \text{A}) + (14.7 \times 1.06\ \text{A}) + .07\ \text{A}$$
$$\text{Pop. } 5 = (85.2 \times 1.06\ \text{A}) + (16 \times .94\ \text{A}) + .09\ \text{A}$$

These equations result in 1.13, 1.06, and .96, in other words they are closely approximated by the 1.13, 1.06, and .94 of our hypothesis. If we assume that practically all of e3 and e4 (say nine-tenths) failed the previous year, and that of e5 two-thirds failed the previous year, the above equations give for b3 + those who would count in b3 had they not been eliminated, for 4b + those who would count in b4 had they not been eliminated, and for b5 + those who would count in b5 had they not been eliminated, 1.00 A, .97 A, and .93 A respectively; that is, there is a close approximation to the proper relations of the numbers beginning grades three, four, and five in one year, one to another. The approximation will be still closer if we suppose that smaller percentages of those eliminated had failed the previous year.

The fact is that Ayres' figures for grades three, four, and five can be derived from the known facts of retardation only by supposing the elimination in grades two, three, and four to be almost exactly as I estimated it in "The Elimination of Pupils from Schools", and by decreasing by 13 per cent his estimate of the ratios of grade populations to the number of pupils beginning school in one year.

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[5] *Laggards in our Schools*, p. 54.

The same principle holds good for the sixth, seventh, and last grammar grades. If we assume the ratios of grade populations to the number of pupils beginning school annually as 13 per cent smaller than his (that is, .80, .63, and .45), assume the elimination grade by grade as stated in my "Elimination of Pupils from School", and then for any grade add those promoted from a previous grade to those held back in the same grade, and subtract those eliminated, we get .76, .64, and .45, a very close approximation to our .80, .63, and .45. The equations are

$$\text{Pop. } 6 = [(84\% \text{ of } .94\text{ A}) + (11.3\% \text{ of } .80\text{ A}) - .13\text{ A}]$$
$$\text{Pop. } 7 = [(85.7\% \text{ of } .80\text{ A}) + (15\% \text{ of } .63\text{ A}) - .14\text{ A}]$$
$$\text{Pop. last grammar} = [(85\% \text{ of } .63\text{ A}) + (12.5\% \text{ of } .45\text{A}) - .14\text{A}]$$

It appears therefore that Ayres' estimate of the number of pupils beginning school in one year is relatively too small (or his estimate of grade populations relatively too large), and that instead of 1.29, 1.28, 1.20, 1.06, .90, .71, and .51, he should use 1.14, 1.13, 1.06, .94, .80, .63, and .45.

If now, instead of assuming, as Mr. Ayres does, that all the non-promoted in grades six, seven, and eight are surely eliminated before the next year's enrolment is counted, we estimate how many of them are on the basis of the facts reported for Galesburg, Kansas City, Mo.; Springfield, and Williamsport, and replace Ayres' $\frac{\text{Pop.}}{\text{A}}$ or per cent which each grade's enrolment is of the number of pupils beginning school in one year, by $\frac{\text{b}}{\text{A}}$ or per cent which the number of pupils beginning the grade in one year is of the number of pupils beginning school in one year, we have

$$\text{Pop. } 4 = \text{b}4 + \tfrac{7}{8}\text{ f}4$$
$$\text{Pop. } 5 = \text{b}5 + \tfrac{5}{6}\text{ f}5$$
$$\text{Pop. } 6 = \text{b}6 + \tfrac{4}{5}\text{ f}6$$
$$\text{Pop. } 7 = \text{b}7 + \tfrac{3}{4}\text{ f}7$$
$$\text{Pop. last grammar} = \text{b last grammar} + \tfrac{2}{3}\text{ f last grammar}$$

which give

$$\text{b}4 = (1.06\text{ A} - .15\text{ A}) \text{ or } .91\text{ A}$$
$$\text{b}5 = (.94\text{ A} - .125\text{ A}) \text{ or } .815\text{ A}$$
$$\text{b}6 = (.80\text{ A} - .091\text{ A}) \text{ or } .709\text{ A}$$
$$\text{b}7 = (.63\text{ A} - .07\text{ A}) \text{ or } .56\text{ A}$$
$$\text{b last grammar} = (.45 - .038\text{ A}) \text{ or } .412\text{ A}$$

The corresponding figures in "The Elimination of Pupils from School" were .90, .81, .68, .54, and .40. We know that elimination has grown a little less severe in the last seven or eight years. It appears, therefore, that Ayres' method for estimating elimination, if used without error and as for the year 1900, would give results in full agreement with those stated in "The Elimination of Pupils from School". It is certain that Ayres' estimates of elimination are too low, because of his astonishing error in assuming that all of the non-promoted children in the sixth, seventh, and eighth grades leave school before the next year's enrolment is counted,—unless, of course, he has made some error of equal amount in the opposite direction.

# THE RESTORATION OF CHILDREN OF THE SLUMS.

## By Lightner Witmer, Ph.D.

The finished product of slum life has been many times described. Emaciated, neurasthenic, ill nourished, perhaps tuberculous, and certainly afflicted with many physical ailments, the adult man or woman of this adverse environment can rarely do a day's work for a day's wage. Unable to maintain a satisfactory standard of living, the victim sinks deeper into the abyss.

One does not expect figs to grow from thistles, and the slum child seems naturally destined by the force of heredity to grow into an inefficient adult. There are many reasons, however, for repudiating this belief in the potency of heredity. The different races of men are not separated from one another as are the fig tree and the thistle. The different social classes of the white races constitute more nearly a single human family. Modern research, such as the parliamentary investigation into the physical deterioration of the English people, indicates that the degeneracy which is symptomatically associated with slum life, is to a great extent acquired by each generation and not inherited from the preceding. The inefficient product of the slum is the result of the treatment received during infancy and childhood. Children of the rich, of the moderately well-to-do, and of the poor are, as it were, representatives of the same species of plant growing under diverse influences of soil, sunshine, air and moisture. You would doubtless consider it dangerous for your own child to spend a single night in a typical home of the slum. Children born into slum life, of slum parents, apparently do not differ very greatly from your own. A few of them, but only a few, are strong enough to fight their way out of their environment into better conditions, and even these bear permanently the scars of the battle. Many succumb quickly to the unfavorable conditions. The majority are irretrievably damaged in early life and their physical, mental and moral development is more or less seriously retarded. Shall we shut our eyes in order not to see that grinding poverty is slowly executing a death sentence upon many of these children, a sentence which is only the more cruel because it takes so many years to be finally carried out?

Ignorance and preconceived opinions only too frequently act as a bar to social and intellectual progress. They affect judges upon the bench, medical experts, school authorities, charitable organizations, and are reflected in legislation. A case in point is the common belief that the children of inefficient or criminal parents inherit an ineradicable tendency to inefficiency or crime. Another is the sentimental belief in the value of the family as a social unit which blinds many people to the inadequacy and evil influence of particular homes. We should not lightly give the name of "home" to every domicile where parents and children are living together. Granted that the right kind of father and mother and the right kind of home exert an influence upon the child intellectually and morally which no other agency can ever satisfactorily reproduce, at the same time it is only fair to recognize that there are many homes from which children must be permanently rescued if they are to become in adult life the centers of satisfactory home life for their own children. Homes which are in no sense worthy of the name, rear children who in turn are incapable of establishing homes for themselves. The single social problem presented by one family is thus multiplied by four or five in the next generation. From the standpoint of science, children who are retarded in physical, mental, and moral development as a result of environmental conditions, are unnecessarily retarded. If we permit this retardation to persist, it means permanently arrested development and degeneracy. If, as many believe, acquired degeneracy exceeds in amount inherited degeneracy, then temporary help which leaves the child still at the mercy of his environment does little to solve the problem. In many cases it succeeds only in enabling children to survive, propagate their kind, and thus reproduce the social problem four or five fold.

It is only through a persistent effort to restore defective children of the slums to normal physical and mental condition that we may expect to throw light upon the causes which are producing degeneracy. My object in reporting the cases of two children for whom the Psychological Clinic has undertaken this work of restoration, is to contribute to a better understanding of the social problem. Primarily our aim is to discover mental and moral defects and to treat the child in such a way that these defects may be overcome or rendered harmless through the development of other mental and moral traits. In endeavoring to do this we must necessarily take cognizance of certain causes, which are at the root of the evil. Among these causes are the physical defects constituting the soil in which mental defect and retardation frequently develop, and for the treatment of such physical conditions the Psychological Clinic sends these children to the proper medical experts. Both the physical and the mental defects are also directly the result of environmental conditions. Through its social service department the Psychological Clinic takes into consideration the entire social life of the child. To some extent we may suggest social treatment, but for the most part we must rely upon the many organized charities for the care of the physical and social condition of the poor. The kind of treatment which is required in these cases cannot be adequately carried out by any one agency. It is necessary that the Psychological Clinic should be adequately equipped to carry on its own work, and it is equally necessary that many other agencies should be contributing their share to the treatment which the case demands.

In the treatment of a defective child of the slums physical defects must be cured if possible. If deterioration has progressed so far that cure is out of the question, the condition of the child may be at least ameliorated. Adenoids are removed easily enough: deafness resulting from adenoids requires prolonged treatment which may never succeed in making the child's hearing normal. The results of an insufficient nutrition of long standing can rarely be cured. Months or years may be required to bring the child into satisfactory condition for mental progress. That society is beginning to appreciate the value of undertaking treatment of long duration for the cure of certain diseases is evidenced by the social and medical battle for the treatment and cure of tuberculosis. Mental and moral defects, whether developed upon the basis of physical defects or due to neglect of training, may be expected to occupy a longer time than physical defects for their treatment and cure.

A second stage in the treatment of any defect is the after-cure. In many cases it is a waste of effort to remove a child's adenoids and allow him to return immediately to the same conditions under which the adenoids developed. Mental and moral defects may yield to treatment in a suitable environment, only to reappear at once in the old environment. A child may be considered cured by the Psychological Clinic, and its cure may be attested by its response to intellectual and moral training in the Hospital School, and yet it can not be expected to stay cured if it returns too soon to the old conditions. If the work of the Psychological Clinic is to be really effective, some provision must therefore be made for a more or less prolonged after-treatment, which may be carried out in suitable homes provided by agencies for the care of children.

The homes of many children are of such a character that no child living in them could be free for any length of time from physical and mental defects. Unless these homes are in some way reconstructed, the children can not be returned to them without risking a recurrence of the earlier conditions. Social work upon the home is essential if these children are to be permanently helped, and if child degeneracy is to be reduced to a minimum. The necessity of having homes of a satisfactory social and economic level for the protection of children and for the successful combat against race degeneracy, should add renewed energy to those agencies whose province is the care of the home life of the poor.

AT THE PARTING OF THE WAYS

OUGHT WE TO ALLOW HUMAN MATERIAL LIKE THIS TO BE WASTED AND DESTROYED, TO DEVELOP PHYSICAL DEGENERACY, MENTAL RETARDATION AND MORAL DELINQUENCY?

A striking illustration of the conditions which produce the type of child who is brought to the Psychological Clinic is shown by the little girl whose likeness appears on the preceding page. She is the daughter of a ragpicker, the flower of a flock of seven children, of whom two have died, one as the result of accident, and one from pneumonia. Of the remaining children, the oldest boy is a low-grade imbecile and the second boy is a frail looking child who is not getting on well in school. The social worker who visited the home and the school for the Psychological Clinic found this boy one of a large group of desperately poor foreigners, who were being taught in a room entirely without ventilation. Of the younger children, one is apparently in very poor physical condition, and is said to be afflicted with tuberculosis. A baby has been for some time in the hospital, where he was treated with thyroid extract for cretinism. In addition to insufficient nutrition and lack of care, the result of the impoverished home, there is some marked cause of degeneracy in the family, possibly syphilis, which has affected at least two of the children.

When this little girl came with her elder brother on November 20th to the Psychological Clinic, her appearance was very different from that presented in the picture. The mother had brought the boy because of feeblemindedness. The little girl accompanied her mother because she could not be left at home. I was attracted by the bright face and good looks of this child, which were all the more striking because of their setting of ill health and physical degeneracy. In spite of dirt and inadequate clothing (on a cold, rainy day, the child came with leaky shoes and no overshoes) she seemed to be of normal mentality and attractive appearance, a child of whom any mother might be proud. Her teeth were in a serious condition; she was afflicted with pediculosis; she had a bad cough which suggested tuberculosis, and the nasopharynx was obstructed with adenoids and enlarged tonsils. She appeared, however, to be mentally normal and therefore not exactly a case for the Psychological Clinic, but we undertook her treatment because her condition was a critical one where further mental development might be retarded.

This child, who came from a neighboring city, was cared for during a period of two months under the supervision of the Psychological Clinic. Miss Kohn, who was then Superintendent of the Industrial Home for Jewish Girls, took charge of her. She was taken for regular treatment to the dental clinic of the University of Pennsylvania, where she was examined by Dr. Kirk, who reported her mouth to be in an extremely unsanitary condition. To quote from his letter:

"She is just at that stage when her dentures are changing from the deciduous to the permanent set, which is a critical period even under normal conditions; but added to the extreme probabilities of nervous stress ordinarily incident to this dentitional crisis, her alveolar borders are infected and in a state of more or less active inflammation. She is undoubtedly swallowing large quantities of pus germs and other toxic substances arising from bacterial action in her mouth.

"Her powers of mastication are extremely limited, not only by reason of the damage to her masticating mechanism from caries, but mastication is necessarily painful to her by reason of the inflamed and infected condition of her gums.

"I would call your attention to the malformation of the hard structures of both her upper and lower incisor teeth, and of a portion of the crowns of her first permanent molars above and below. The condition of these teeth indicates that during their formative period the child has been subjected to some general inflammatory disturbance, which has arrested for a time the normal development of the teeth under consideration."

Under the direction of Dr. Ludlum she was placed on anti-syphilitic treatment, and following Dr. Butler's diagnosis of adenoids she was taken to the Woman's Hospital and operated on for adenoids and tonsils. Clothing was obtained for her through Miss Kohn, and her improved appearance made it possible to take the photograph in the Psychological Laboratory which is reproduced on the preceding page.

Despite the great improvement shown after two months of treatment, physical deterioration had already set in, and at seven years it was already too late to free this child entirely from the degenerating effects of her environment. If this little girl could be kept for six months or a year in a favorable environment, and subjected to satisfactory educational influences, it might be possible to arrest the progress of physical degeneracy and to overcome the mental and moral retardation. While under Miss Kohn's care she manifested the persistence of the infantile instinct of appropriation, taking things which did not belong to her, without any regard for the rights of others. Little impression could be made upon her during this brief period, attention being chiefly directed to the improvement of her physical condition. If there had been at my disposal the necessary funds for her board and training, I should have kept her in the Hospital School for a period of time under observation and training. Her failure to recognize the property rights of others is nothing more than an evidence of the lack of moral training. I do not believe in the existence of criminal instincts, and the fact that this child is unable to distinguish between right and wrong with respect to property is in my opinion no evidence that she is at this time a moral degenerate. Instincts which are perfectly normal in the young child are sometimes outgrown by the natural process of development. Sometimes they are inhibited by the development of other instincts, and sometimes they are subjected to control through the right sort of training. Just as a child's second teeth can not be expected to be normal and sound unless the child is in fairly good health at the time when the teeth naturally appear, so we cannot expect a child to pass through the several stages of development, acquiring one trait of character after another, unless the child has an opportunity to develop normally, both physically and mentally.

Traits of character develop at diverse periods in a child's life, and are a natural process of growth. Just as stones, weeds, drought, or vermin will maim the plant, so that the buds it brings forth are stunted, worm-eaten, doomed to decay before maturity, so the lack of good food, light, air, and happiness may delay the appearance of instinctive traits of character until the child, like the bud, is stunted, weak, inefficient, perhaps imbecile. The second case which I shall report is a striking illustration of the effect of environmental conditions upon the development of mental and moral character.

Fannie is the offspring of Russian Jewish parents, who with their seven children were crowded into two small rooms. The living-room had one window, and contained a table, a few chairs, a stove, a lounge, dirty clothes piled in one corner, a barking cur and many flies. The table was covered with a piece of black oilcloth, and on this were usually to be found pieces of brown bread and glasses of tea. No meals were prepared and the family never sat down to table. Their diet consisted chiefly of bread, tea, and sometimes fish. The bread was always on the table for the flies to crawl over and the children to eat when their hunger drove them to it. The front of the house looked out on a board fence which divided a double alley. In the rear was a small back yard. One hydrant at the entrance sufficed for the different families. There was underground drainage, but an offensive odor came from the closets. This was the soil in which Fannie had struggled to grow for eight years. When the school nurse visited the house Fannie sat crouched in a corner, her eyes sullen and dead, her mouth hanging open, her skin showing her poorly nourished condition. Her eyes were crossed, her teeth irregular, the whole face devoid of life or interest.

Fannie had been two years in the first grade of a Philadelphia school and had made in that time so little progress that there was no possibility of promoting her to the next grade at the end of the school year. During the first year her attendance had been somewhat irregular, but despite the regular attendance of the second year she had profited little, and had come to be overlooked, because she was thought to be too feeble-minded to progress in a school for normal children.

When brought to the Psychological Clinic by a school nurse of the district, she was wearing glasses prescribed by the school physician, but she was still noticeably cross-eyed. Her speech was so defective that it was practically impossible to understand anything she said. She appeared extremely dull, sullen and stubborn. I discovered, however, that she was quite deaf and questions of a very simple character, which she appeared too stubborn to answer, would bring forth a reply, if repeated in a very loud tone of voice. Despite these physical handicaps, her most serious defects in my opinion were temperamental and lay in the emotional rather than the intellectual field. She did not seem to understand affection, showed at first no curiosity, no vanity, no generosity, no spirit of helpfulness, no domestic traits or interest in the house, and very little fondness for a doll. I believe that curiosity, vanity, energy, good-will, affection, self-respect, domestic and maternal instincts are very important elements in the training of a child. Stubbornness, lethargy, and indifference are the weeds which choke these healthy emotional growths, and until removed they preclude all possibility of advance.

First Fannie was sent to a hospital where she was operated on for adenoids and enlarged tonsils.

Two weeks after the operation I saw her again. Even in that short time the child's appearance had altered for the better. She looked stronger and her skin gave evidence of her improved condition. The mouth was still open but her whole expression had changed. She was a little more alert and took some interest in her surroundings.

In the course of the next two months she made very little additional improvement. A more thorough examination showed that she was very deaf for words and sounds, but especially for spoken language. Her inability to give attention rendered it difficult to ascertain the exact degree of deafness. Her articulation also remained defective, although her speech had improved sufficiently to enable her teacher to understand nearly all that she said.

On the opening of the Hospital School, July 1, 1907, Fannie was entered for training. Here she remained for one year, attending for the first six weeks the class for backward children at the University of Pennsylvania. For the next six weeks she was in the country under training, and on October 1st she was entered in the first grade of a Philadelphia school, living in the Hospital School and receiving constant assistance in her lessons. Although she made satisfactory if slow progress in her school work, her greatest strides were made in the emotional field.

She was extremely obstinate, but her obstinacy was not mere wilfulness which could be eradicated through strict discipline or an appeal to her moral sense. It appeared rather as a temporary clouding of her consciousness which it was found best to ignore. When treated thus, she would gradually brighten up and be ready to receive instruction. Her dullest period was the first in the day before her interest was awakened. In the beginning a half hour was allowed her to adjust herself to the school environment. At the end of four weeks the period of her apparent stupor was reduced to about fifteen minutes, and in two weeks more she was actively attentive and quick to learn during even the first half hour. At first she did not seem to understand affection, and when another little girl, who was homesick and needed a petting, grew demonstrative, Fanny laughed in a bewildered way as at a strange manifestation. Before six weeks were up she was the most demonstratively affectionate child in the school.

How much of Fannie's shyness was due to a perception of her failures it would be difficult to say. In the beginning it was impossible to get her to read or cipher before people, but after the first year she did this with the greatest pleasure and was ready with pride to exhibit her attainments. Several times during the first six weeks she was with us we tried to photograph her but she persistently turned her back. Was this shyness or shame at the pitiable appearance she presented? Certainly at the beginning she showed no signs of vanity whatever or of interest in her person, but as we gave her better clothes she began to take the keenest pride in herself, and vanity became one of those traits to which we could appeal with uncommon success. A year and a half later she brought a photograph of herself to me with the greatest pleasure,—a pride and pleasure not to be wondered at when I remembered the starved, dull, miserable, sickly child and then looked at the happy, alert face, the intelligent eyes, the closed mouth, the neat dress and pretty hair ribbon, and saw what the photograph could not reveal, the clear, white skin and healthy color in the cheeks.

During the first summer she appeared extremely sluggish. She showed very little tendency to play and preferred to sit more or less motionless. As good food, better air, sunlight, and kindly treatment began to take effect, she burst forth with such excessive vitality, such exuberant spirits, that once when I had her before the Psychological Clinic, one of the teachers asked if the lively movements were not the result of St. Vitus' Dance. This first outburst of vitality gradually subsided, leaving her a normally active child.

When her mother came to school to see her, Fannie would run and hide. When brought forth, she was once again the dull, sullen, obstinate child of the past. Once the mother brought her some fruit but the child would not take it from her, receiving it at last through a third person. The presence of the mother or other members of her family brought out in the child all her earlier traits. A puppy raised in the kennel and later trained to be a house-dog, never fails to resent being put back in the kennel, nor could this child fail to react as she did towards the relatives who were the only links with her past miserable existence. Every time Fannie was allowed to visit her family—she was never permitted to spend a night with them while in my care—she was ill for two or three days afterwards.

At first entirely lacking in domestic traits or interest in the house, she later evinced a great desire to help in the housekeeping, overcoming great awkwardness in order to carry out this purpose.

Six months after entering the Hospital School, she received at Christmas the first doll she had ever had, and this remained for a long time her most cherished possession. In this way the maternal instinct made its appearance, and about the same time she was taught to sew and began to take an interest in the personal care of her clothing. In time her curiosity awoke and she began to show a child's usual inquisitiveness.

The operation for adenoids had been followed by a marked improvement, but during the first summer the child's nose again filled up. Her deafness seemed to increase, periods of stupor appeared, and finally her attention could not be held for school work at all. Her breathing showed increased obstruction and the mouth was again held widely open. These unfavorable conditions were all removed through a second operation. The obstructed breathing did not disappear more rapidly than did the obstructed intellectual and emotional processes. The operation made her again a fairly bright child. A period of more rapid improvement in all her work followed, the child laughing and talking more and seeming anxious to assist with the work.

The defective hearing due to the disease of the middle ear, the result of the adenoids, was a severe handicap. In spite of this, during the second year, while living under my care with a private family, she made satisfactory progress in the public school. When Fannie first came to us we failed to appreciate how little she understood of what was said to her. Six months afterwards, we discovered she had not the faintest conception of the English word "bird". When told about Christmas and Santa Claus, she asked, "Will to-morrow be Santa Claus?"

Articulation exercises enabled Fannie to express herself so that she could be understood. They also improved her hearing very greatly, and this in turn made her articulation more nearly perfect. The mental discipline to which she was subjected cultivated and steadied her powers of attention. But if I were asked to state what had been most essential for this child's development, I believe I should say good food, a hygienic environment and a measure of happiness.

Certainly all of this child's defects flowed directly from the impoverished condition of her family. An older sister, sixteen years of age, presented a striking picture of physical degeneracy. She had left school at thirteen, when in the fourth grade, to go to work in a factory. About the time Fannie came to the Hospital School, the older sister was thrown out of work, for what reason I do not know, but six months later she was physically unfit for any kind of labor. For a year she was looked after by the medical dispensary of the University Hospital, whose social service department demonstrated its usefulness by finding a temporary home for her in the country, after other treatment had failed. She was a pitiable looking specimen and medical opinion characterized this sixteen-year-old child as a chronic neurasthenic. Her life energies are practically exhausted. She is done for, and fit only for the scrap-heap. She is a physical degenerate, but there is no warrant for blaming this fact on inheritance, accident or disease, on the contrary there is every indication that it is due to poverty and neglect. When one looked beneath the unpleasant aspect of the older child, one saw a good looking girl with perfectly normal features, undoubtedly possessed of normal intelligence. She and her younger sister Fannie entered life as little handicapped physically and mentally as any other normal children. There are two children younger than Fannie, who are yet to go through the mill, a girl aged two years, and one aged nine, who has already been taken to a dispensary by the school nurse to have her tonsils removed. If this were supplemented by a daily trip to a bakery and dairy, she might have a chance. Between Fannie and the sixteen-year-old sister, is a boy of thirteen. Concerning him the older sister said, "He gets on all right, he's never sick, only had typhoid fever twice." He occasionally makes a little money for the family by selling papers. Another boy, aged fifteen, was rescued from his family by the Juvenile Aid Society and placed in a private home, but the opportunity for restoration offered him was of brief duration. His mother appeared before the Juvenile Court and succeeded by the use of strenuous pleading in inducing the judge to order the boy returned to her custody. His labor is now contributing to the income of the family. The mother states that she is willing to commit the entire care of Fannie to others until the girl is fourteen years old, when she will be taken home and put to work to contribute to their support. Last summer Miss Elliott, with whom I had placed Fannie for a year, having become much attached to her, was ready to take the child with her to her western home. She offered to adopt her but the mother's consent to this could not be obtained. I placed the matter in the hands of the Children's Aid Society, to see if a court order could not be obtained committing Fannie to Miss Elliott's care until she was twenty-one, but after consultation we deemed it hopeless to make this appeal to the court, because of the disinclination of judges to take any action resulting in breaking up so-called "family life". There can be no doubt that the mother of these children has some maternal feeling and under ordinary circumstances she is entitled to the possession of her children. On the other hand there is also

BECAUSE NO PROVISION IS MADE FOR THE TRAINING OF A CHILD LIKE THIS IN THE PHILADELPHIA SCHOOLS, IT WAS PROPOSED TO PLACE HER IN AN INSTITUTION FOR FEEBLEMINDED CHILDREN.

no doubt that she looks upon her children as an investment on which she has the right to draw interest as soon as the children are able to work. She cannot be made to understand that her methods are productive of deterioration, and that if these children were given an opportunity to regain a normal condition of mind and body, and were not forced to labor prematurely in an unfavorable environment, they would be better able in the long run to contribute toward the sustenance of the family.

If our history of Fannie's restoration shows the inadequacy of social service organizations and of the Juvenile Court to cope with such difficulties, it also shows the unpreparedness of the public school system to provide the proper sort of training for children like Fannie. For a year and a half Fannie was a pupil in the Newton School for Girls, where she made fairly good progress. She succeeded in doing the work of the first grade, owing to the fact that Miss Bradshaw took unusual interest in the child, and that she was one of the few children in the school requiring special attention. Her deafness seemed to be her chief handicap, although in some directions Fannie is mentally slow and dull. Naturally, the instruction was in reading, writing, and arithmetic. What Fannie needed was instruction in manual work, especially in domestic science, which she could readily learn and for which she is temperamentally adapted. In another public school where she was entered this fall, the child was considered unfit for the normal grades, and the suggestion was made that she should be sent to an institution for feeble-minded children, because only in this way could she obtain suitable instruction. Undoubtedly Fannie is not a child who can be taught in classes of fifty the ordinary subjects of the school curriculum; but the child does not belong in an institution for feeble-minded children, and it is a depressing commentary on the public schools of Philadelphia that the lack of provision for girls of this kind should make it necessary to consider the possibility of placing her in such an institution.

The work of restoration with this child has been partly mental and partly physical. It has been of long duration, and is not yet completed. It has been accompanied by the expenditure of considerable money, and many agencies have taken part, as well as many private individuals. It may not be undesirable to enumerate these agencies:—

The school nurse;
The school medical inspector;
The Psychological Clinic and Hospital School of the University of Pennsylvania;
The Polyclinic Hospital;

The Nose and Throat Clinic of the University of Pennsylvania;
The Dental Dispensary of the University of Pennsylvania;
Professional services of an oculist, Dr. Burton Chance;
Professional services of a nose and throat specialist, Dr. Ralph Butler;
Professional services of Dr. S. D. Ludlum;
Miss Elliott;
The Newton Girls' School;
The Children's Aid Society;
The Juvenile Aid Society;
The social service department of the Psychological Clinic;
Miss Marion Kohn and the Industrial Home for Jewish Girls.

Because the services of these various individuals and organizations were rendered without direct charge, nevertheless some one paid in time or money. The expense, however, can not be accurately estimated. In addition to these services Fannie has been supplied with clothing for the last two years and a half through the kindness of persons interested in her behalf by the Psychological Clinic. Moreover, the cost of her board and training in the Hospital School was contributed by private philanthropy. This alone amounted to several hundred dollars. I estimate the cost of Fannie's restoration up to the present time to be in the neighborhood of from fifteen hundred to two thousand dollars. This expenditure has been made to restore a child to normal condition, to repair the damage done by the environment. The problem is not yet solved, for all this expenditure of effort and money will go for naught if Fannie is sent back to her former environment.

The problem calls for preventive social action. The conservation rather than the restoration of the child is to be preferred as social work—to keep the child on its feet rather than to lift it up after it has been knocked down. To conserve the children of the next generation, however, we must begin by restoring their future parents, the children of this generation. We should offer the slum parent something better than a choice between race suicide and child murder.

# REVIEWS AND CRITICISM.

*How Two Hundred Children Live and Learn.* By Rudolph R. Reeder, Ph.D., Superintendent New York Orphan Asylum. New York: Charities Publication Committee, 1909.

The conventional pity which the term *orphan child* is apt to excite, a pity heightened through the ages by harrowing poems and Christmas stories, is rather thrown back on itself by the cheerful picture of two hundred orphans drawn for us by Dr. Reeder. In fact, after reading his book we find ourselves insensibly transferring our sympathy to those children whose parental handicap debars them from the wise training and pleasant pastimes of an up-to-date orphan asylum.

The orphanage in question has a beautiful country home at Hastings-on-Hudson, where the children live in small groups or families, self-dependent in household work, in gardening and in various interests of the home. It is here that Dr. Reeder has carried on an educational experiment of great value, and has worked out some admirable theories as to the rearing of children.

The first chapter deals with the importance of providing nourishing food, of having it well cooked, of varying it frequently, and of using the appetite incentive as an educational factor. For instance, we see the child cultivating his radish, lettuce, and onion beds, with the option of eating his crops, selling them, or giving them to his friend. Dr. Reeder speaks of one week when so few radishes were offered for sale that the orphanage raised the price, with good results. The orphanage supply store with its array of gastronomic delicacies offered the necessary incentive for earning pennies.

After the food question comes exercise and environment. Dr. Reeder dwells on the advantages of country life, the ideal environment for the growing child, and of the value of that side of his life called play. He tells of play-houses built by the children themselves, of skating in winter and swimming in summer, and of many pursuits and possessions which do away with the alleged barrenness of institution life.

As a cure for dependency and lack of self-reliance, two of the dangers which threaten the institution child, Dr. Reeder recommends industrial training. The girls learn house-work, cooking, sewing, gardening; the boys raise chickens, vegetables, learn carpentering, etc. Work in each cottage is divided up among many apprentice hands.

Dr. Reeder believes that hand work and head work should both have a place in the training of a child. But in order to have their life at the orphanage a real preparation for life in the world, the economic training is emphasized. The children are taught how to earn, save, spend, and give money. The wage-earning positions in the orphanage and the saving banks provide for the first two. A certain proportion of the wages received must be spent on clothes. These purchases the child either makes alone, or with the help of an older person. The important thing is to give them a buying experience. Each child earning a dollar or more a month is required to keep an itemized expense account, and submit it each month for inspection. One of the most important arguments in favor of economic training is the protection it affords the boy or girl, who, as Dr. Reeder shows, is often in danger of being exploited for mercenary ends, or made to serve a number of years without wages.

Dr. Reeder believes that an institution for dependent children should maintain its own school rather than send its wards to the public schools. He accuses the latter, with some justice, of being "bookish, abstract, and out of touch with the hum of modern life . . . the hand-me-down suit of twenty years ago, not the tailor-made suit that fits." In criticism of the usual public school curriculum, he says, "Why shouldn't the boys and girls drop out of school as soon as allowed to? They want life and want it more abundantly than they find it in the schoolroom." In Dr. Reeder's plan, "the child plants the radish, cultivates it, pulls it, brings it to school, paints its picture and finally eats it." There you have the maximum of education with the minimum of waste!

Everything possible is used in the class-room, even questions of interest arising in the complex life of the orphanage. The following is an amusing example. "One of our horses is wind-broken and has some trouble with his knees, but he is a large, fine looking horse, and a free goer. A man in Dobbs Ferry has offered us one hundred and twenty-five dollars cash for the horse. Shall we tell him the horse is unsound? After much discussion pro and con in general assembly, it is decided to vote on the question. The result: the girls all voted that we should tell the man the horse was broken-winded and slightly off on his legs, causing occasional veterinary bills; the boys all voted that we should accept the offer and let the buyer take his chance on the deal." And yet there are people who believe that woman's entrance into politics would only lower the moral standard!

In his chapter on punishment Dr. Reeder shows that constant occupation for the child does away with the necessity of frequent punishments. Two rods which can be used effectively in his opinion, are a system of fines and deprivations. He believes in putting children on their honor wherever possible, and in trusting them that they may become worthy of trust, and he thinks, "you fight the battle alone in training a child, if you do not have his conscious co-operation in the work." His experience has taught him that punishment inflicted by the social group injured, is twice as effective as punishment by one in authority. He does not agree with Dr. Abbott in his book recently reviewed for the Clinic, in which discipline and instruction are concealed under a sugar-coating of make-believe. In this regard Dr. Reeder tells an amusing story of "an indulgent mother who was unable to get her young son to bed without resorting to devices, one of which was for a member of the family to impersonate a hotel proprietor, receive the boy as a guest, and show him to his room."

Stress is laid on the value of having in the child's life the example and influence of older people whom he respects and admires. Asked to name the chief factor which may make or mar the child's future well-being, he unhesitatingly says, "the personality of teacher, foster-parent, or companion."

Dr. Reeder's book is full of interest. To handle two hundred children in an institution, to keep them healthy, occupied, orderly, and happy, and to train them to become self-supporting men and women in the future—this is a great work and Dr. Reeder's way of going about it commands our highest respect and admiration.

E. R. W.

## NEWS AND COMMENT.

### *Public Interest in Retardation.*

We confess to astonishment at the public interest which the problem of retardation has excited. We were prepared for the recognition of the importance of the problem on the part of those familiar with certain phases of child development and education. We did not expect the widespread appreciation of the importance of attacking the problem of the educational development of the child in the public schools from the standpoint of retardation. The work of Mr. Ayres of the Russell Sage Foundation has been particularly effective in this direction. At the meeting of the American Association for the Advancement of Science, Thursday, December 30th, a joint session was held with the Social Education Club of Boston, at which Mr. Ayres presented some of his charts. Mr. Ayres has an unusually happy faculty of making charts and statistics interesting. At the meeting of the Department of Superintendence of the National Educational Association to be held at Indianapolis on March 1st, Mr. Ayres will present his material at an all-day session devoted to the individual differences and retardation of school children.

### *The Growth of Psychological Clinics.*

There can be no doubt that the psychological clinic for the examination and treatment of backward children is destined to become an important institution in connection with our universities and public school systems.

We have already called attention to the organization of a psychological clinic in connection with the schools of Los Angeles. The Oakland schools have also organized a Department of Health, Development, and Sanitation, under the direction of Dr. N. K. Foster. Under a general law of the state of California this department is authorized to perform the function of a psychological clinic.

Clark University has organized a Children's Institute for the scientific investigation of the development of school children. The program of organization comprehends a psychological clinic. The organization of this work at Clark University is inspired and directed by President G. Stanley Hall, who has been for the past twenty-five years easily the foremost contributor to the development of an applied psychology in the service of education.

We learn also that the departments of psychology and education at the University of the State of Washington, Seattle, Wash., have planned a psychological clinic for the benefit of defective children of Seattle and vicinity. The clinic is held on Saturday mornings from 9.30 to 12.30 and opened November 20th. It is under the direct charge of Professor H. C. Stevens, Department of Psychology, and Professor Edward O. Sisson, Department of Education.

### *Playground Statistics for 1909.*

The Year Book of the Playground Association of America shows that out of the 914 cities and towns in the United States having a population of five thousand and over, 336 municipalities are maintaining supervised playgrounds.

The actual number of playgrounds that were being operated in 267 of these cities during 1909 was 1535. About fifty-six per cent of these supervised places for the play of children are located in the area of greatest density of population, in the North Atlantic States, where the need for playgrounds has not only emphasized itself strongly upon the social mind, but has been met to a large extent by the actual establishment of playgrounds. The number of cities in the North Atlantic States maintaining playgrounds is 149, and the number of playgrounds established in 123 of them is 873. Massachusetts particularly has led in the playground movement, as in so many other movements for progress and social betterment.

In 55 of the larger cities local playground associations have been established, and many of the smaller towns have organized playground committees that will shortly be converted into permanent organizations. Of great assistance have been the churches, women's clubs, Young Men's Christian Associations, Associated Charities, and public-spirited men and women everywhere.

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